

**CONTRACT DOCUMENTS
and
TECHNICAL SPECIFICATIONS
for
PARKDALE CHANNEL IMPROVEMENTS**

April 2016



***City of*
Norfolk**

Department of Public Works

**7th Floor, City Hall Building
Norfolk, Virginia 23510
(757) 664-4631**

CITY OF NORFOLK

PARKDALE CHANNEL IMPROVEMENTS

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- Attachment 1 - Minority Business and Women's Business Enterprise (MBE/WBE) Requirements of 40 CFR 33.240
- Attachment 2 - Bidder Compliance Statement/Certification Regarding Equal Employment Opportunity
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Posted: April 8, 2016

**INVITATION FOR BIDS
CITY OF NORFOLK - DEPARTMENT OF PUBLIC WORKS**

PROJECT: PARKDALE CHANNEL IMPROVEMENTS

Owner: City of Norfolk
Department of Public Works
Room 700, 7th floor, City Hall Building
810 Union Street, Norfolk, VA 23510
Contact: C.W. Gaskill, P.E.
Tel: (757) 823-4006 / Fax: (757) 441-2402

A&E: CDM Smith
5400 Glenwood Ave., Suite 500
Raleigh, North Carolina 27612
Contact: Robert V. Hopper, III, P.E.
Tel: (919) 325-3554

Sealed bids are to be received in City of Norfolk Public Works Department, Attn: Contracts Office, Room 700, 7th floor, City Hall Building, 810 Union Street, Norfolk, VA 23510 until **2:00 p.m., Wednesday, May 4, 2016**, for the above titled Project. **A Pre-Bid Conference will be held at 9:30 a.m., Tuesday, April 19, 2016 at the Division of Stormwater Conference Room, 2233 McKann Ave., Norfolk, VA 23509. Attendance is non-mandatory but highly encouraged.**

The Work under this project consists of restoring and stabilizing approximately 500 linear feet of stream channel. The restoration consists of regarding the existing channel, installing grade control structures, installing native vegetation through an extensive planting plan.

The last day to submit RFI's is 5:00 p.m., Wednesday, April 27, 2016. The City cannot guarantee a response should RFI's be submitted after this date.

Bidding Documents are available from the Department of Public Works, provided on a CD, upon non-refundable payment of **\$5.00 per set** in the form of a check made payable to Treasurer, City of Norfolk. A copy of the Bidding Documents will be on file at The Builders and Contractors Exchange, Inc., Norfolk, VA (757-858-0680), the City of Norfolk web site www.norfolk.gov/bids.aspx, and DemandStar.

A Bid Bond, certified check, or cashier's check made payable to the Treasurer, City of Norfolk, for 5% of total bid must accompany each bid.

State Contractor registration class and number is required on the outside of the envelope. State Contractor registration class and number is required on the outside of the envelope. The City reserves the right to cancel the bid opening or to reject any or all bids in whole or part, when it is in the best interest of the City. The right to waive informalities and to determine responsiveness of any bid and responsibility of all bidders is reserved to the City. Withdrawal of bids will be in accordance with Section 33.1-42.1 of the Norfolk City Code and Section 11-54 of The Code of Virginia, 1950 (as amended).

David L. Ricks, P.E.
Director

The Virginian Pilot – April 10, 2016
DemandStar – April 10, 2016

INSTRUCTIONS TO BIDDERS

1. AUTHORIZATION TO TRANSACT BUSINESS IN THE COMMONWEALTH

- (a) Bidder or offeror organized or authorized to transact business in the Commonwealth pursuant to Title 13.1 or Title 50 to include in its bid or proposal the identification number issued to it by the State Corporation Commission.
- (b) Any bidder or offeror that is not required to be authorized to transact business in the Commonwealth as a foreign business entity under Title 13.1 or Title 50 or as otherwise required by law shall include in its bid or proposal a statement describing why the bidder or offeror is not required to be so authorized.

2. SUBMISSION OF BIDS

- (a) Make all bids on "Bid Form" and seal in opaque envelope. The name of project, the contractor's name, address, and Virginia Contractor Registration Class and Number shall be placed on the outside of the envelope.
- (b) If a contract is for \$120,000.00 or more, or if the total value of all such construction, removal, repair, or improvements undertaken by the bidder within any 12 month period is for \$750,000.00 or more, the bidder is required under Title 54, Chapter 11, Code of Virginia, 1950 (as amended), to show evidence of being licensed as a Class A Contractor. If a contract is \$7,500.00 or more, but less than \$120,000.00, or if the total value of all such construction, removal, repair or improvements undertaken by the bidder within any 12 month period is less than \$150,000, the bidder is required to show evidence of being licensed as a Class B Contractor. If a contract is \$1,000 or more, but less than \$7,500, or if the total value of all such construction, removal, repair or improvements undertaken by the bidder within any 12 month period is less than \$150,000, the bidder is required to show evidence of being licensed as a Class C Contractor. The bidder shall place on the bid above its signature its Virginia Contractor Registration Class and Number. If a contract is less than \$1,000.00, licensure is not required under Title 54, Chapter 11, Code of Virginia, 1950 (as amended).
- (c) If bids are submitted by mail, enclose the above noted envelope in a second sealed, opaque envelope and address to: **City of Norfolk, Department of Public Works, Attn: Contracts Office, Room 700, 7th floor, City Hall Building, 810 Union St., Norfolk, VA 23510.** Bids submitted by mail must be received at the above address before the time designated for bid opening.
- (d) Fully fill in all blanks in ink or typewritten, and state numbers in both writing and figures. Signatures shall be in longhand with name and title printed below. Bidders shall acknowledge all addenda in spaces provided on the bid form. For unit price contracts, in the event of a discrepancy between the Total Base Bid and the total of the extension of unit prices, the total extension of unit prices governs in determining the bid amount. For unit price contracts, in the event of a discrepancy between the extension of unit prices and the unit prices, the unit prices governs in determining the bid amount.
- (e) Interlineations, alterations, and irregularities of any kind may be cause for rejection of the bid. Erasures or any physical changes on the form shall be initialed by the Bidder.
- (f) A City of Norfolk Business License is not required to submit a bid. If contract is awarded, Contractor must apply for the license and provide the number.
- (g) Bidders may withdraw a bid after it has been submitted to the City any time prior to the stipulated time for opening such bids. Withdrawal of bids will be in accordance with Section 33.1-42.1 of the Norfolk City Code and Section 2.2-4330 of the Code of Virginia, 1950 (as amended).

3. EXAMINATION OF SITE

The bidder shall be responsible for having ascertained all pertinent local and existing conditions determinable by

inspection and inquiry both on the site and adjacent thereto, including any other work being performed thereon, and shall include in its bid all cost attendant upon problems arising from said conditions existing at the time of submission of its bid.

Reference is made to the Contract Documents for information relating to reports, explorations, underground facilities, and easements. On request, the owner will provide each Bidder access to the site to conduct such examinations, investigations, explorations, tests and studies as each Bidder deems necessary for submission of a Bid. The Bidder must fill all holes, clean up, and restore the site to its former condition upon completion of such explorations, investigations, tests and studies, and hold the Owner harmless from any damage to property or injury to persons resulting from or arising out of such explorations, investigations, tests, and studies.

4. INQUIRIES, INTERPRETATION AND ADDENDA

ALL QUESTIONS MUST BE SUBMITTED NO LATER THAN 5:00 P.M., WEDNESDAY, APRIL 27, 2016.

Should a bidder find discrepancies in, or omissions from, the drawings or documents, or should it be in doubt as to their meaning, it should at once notify the Owner in writing. The Owner will welcome such inquiries and they will be given consideration. Every interpretation made by the Owner will be in the form of a printed addendum which will be on file in the office of the Owner. Addenda will be sent to each bidder, but it will be the bidder's responsibility to know of, examine and become familiar with all addenda issued. All addenda shall become a part of the Contract Documents. The Owner will not be responsible for any oral instruction.

The submission of a Bid will constitute inconvertible representation by the Bidder that the Bidder has complied with every requirement of this Section, that without exception, the Bid is premised upon the agreement by the Bidder to perform the Work required by the Contract Documents, and applying specific means, methods, techniques, sequence or procedures of construction (if any) that may be shown or indicated or expressly required by the Contract Documents, that the Bidder has given Written Notice to the Owner of all conflicts, errors, ambiguities, and discrepancies that the Bidder has discovered in the Contract Documents and the written resolutions thereof by the Owner is acceptable to the Bidder, and that the Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions of performance and furnishing the Work.

5. BID GUARANTEE

Bids shall be accompanied by a bid guarantee of five percent (5%) of the amount of the total bid including all additive alternates, if any, and may be a certified check or cashier's check or a Bid Bond, made payable to: **Treasurer, City of Norfolk**. Such bid bond or check shall be submitted with the understanding that it shall guarantee that the bidder will not withdraw its bid during the period of sixty (60) days following the opening of bids; that if its bid is accepted, it will enter into a Contract with the Owner in accordance with a form of agreement acceptable to and approved by the Owner and that the required Performance and Payment Bonds will be given; and that in the event of the withdrawal of said bid within said period, or failure to enter into said contract and given said bonds within ten (10) days after it has received notice of acceptance of its bid, the bidder shall be liable to the Owner for the full amount of the bid guarantee as representing the damage to the Owner on account of the default of the bidder in any particular thereof. The bid bonds and checks will be returned to the bidders after the Owner and the lowest, responsive, responsible bidder have executed a contract. If the required contract has not been executed within sixty (60) days after the date of the opening of the bids, then the bond or check of any bidder will be returned upon its request, provided it has not been notified of the acceptance of its bid prior to the date of such request.

6. PERFORMANCE AND PAYMENT BOND

The Contractor shall furnish a performance bond and a labor and material payment bond each in the amount of 100% of the contract price. Said bonds shall be delivered to the Owner (in duplicate) and shall be approved by the Owner prior to the execution of a construction contract between the Contractor and the Owner. Bonds shall be City

of Norfolk standard form and shall be in accordance with Section 33.1-76 of the Norfolk City Code. All costs of bonds shall be paid by the Contractor. A bond rider will be required should change orders increase the amount of the contract by \$100,000 or more.

7. NEGOTIATIONS WITH APPARENT LOW BIDDER

The City reserves the right to negotiate with the lowest, responsive, responsible bidder if the bid exceeds available funds. Negotiations may include reduction in bid price, modification and/or reduction in scope of the work, substitution of materials, or any other alterations to the work so that the low bid is reduced to within available funds including a reasonable fund balance for contingency funds to be available during the course of construction.

8. TIME OF COMPLETION

(a) Time is of the essence. **All work shall be substantially completed within One Hundred Eighty (180) consecutive calendar days.** Work shall commence within (10) ten days from date of Notice to Proceed.

(b) Work shall not commence until the Contractor has received a fully executed copy of the Contract which authorizes the Work and has also received a Notice to Proceed issued by the authorized City representative. Work commenced prior to receipt of both a fully executed copy of the Contract and a written Notice to Proceed from an authorized City official shall be deemed unauthorized and such work will progress solely at Contractor's risk.

9. NON-DISCRIMINATION CLAUSE

The Contractor agrees to comply, and to require all suppliers and subcontractors paid in whole or in part from funds made available under this contract to comply with Section 122(a)(1) of the State and Local Fiscal Assistance Act of 1972 (P. L. 92-512), as amended, to wit:

"No person in the United States shall, on the grounds of race, color, national origin, or sex, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity of a State government or unit of local government, which government or unit receives funds made available under Subtitle A (of Title I of the Act.)

Any prohibition against discrimination on the basis of age under the Age Discrimination Act of 1975 or with respect to an otherwise qualified handicapped individual as provided in Section 504 of the Rehabilitation Act of 1973 shall also apply to any such program or activity.

Any prohibition against discrimination on the basis of religion, or any exemption from such prohibition, as provided in the Civil Rights Act of 1964 or Title VIII of the Act of April 11, 1968, hereafter referred to as the Civil Rights Act of 1968, shall also apply to any such program or activity."

Further, the Contractor agrees to comply with Section 33.1-53 of the Code of the City of Norfolk, Virginia 1979, as amended, regarding prohibited employment discrimination.

10. MINORITY BUSINESS CLAUSE

It is the policy of the City of Norfolk to facilitate the establishment, preservation, and strengthening of small businesses and businesses owned by women and minorities and to encourage their participation in the City's procurement activities. Toward that end, the City encourages these firms to compete and encourages non-minority firms to provide for the participation of small businesses and businesses owned by women and minorities through partnerships, joint ventures, subcontracts, and other contractual opportunities. Bidders (offerors) are asked, as part of their submission, to describe any planned use of such businesses in fulfilling this contract.

11. NON-COLLUSION AFFIDAVIT

(a) Every bidder, by submitting a bid, shall be deemed to covenant, with regard to said bid, as follows:

(1) that said bid was arrived at independently without collusion, consultation, communication, or agreement for the purpose of restricting competition, as to any matter relating to such prices with any other bidder or with any competitor.

(2) that, unless otherwise required by law, the prices which have been quoted in the bid submitted have not been knowingly disclosed by the bidder and will not knowingly be disclosed by the bidder prior to opening, directly or indirectly, to any other bidder or to any competitor.

(3) that no attempt has been made or will be made by the bidder to induce any other person, partnership or corporation to submit or not to submit a bid for the purpose of restricting competition.

A bid shall not be considered for award nor shall any award be made where the bidder shall have failed to comply with a(1), a(2), or a(3) above.

(b) Every bidder, in addition to making the above covenants (a)(1), (a)(2) and (a)(3) will be required to provide the City of Norfolk, with the bid submitted, the affidavit contained herein.

(c) Every bidder will be required to disclose, with the submitted bid, the following information:

(1) the correct mailing address of the bidder.

(2) if a corporation, the name and current mailing address of the President, the Secretary and the Treasurer of the corporation.

(3) if a partnership, proprietorship or other firm, the name and current mailing address of each partner, proprietor or member of said firm.

(4) whether or not the bidder is associated with; owns, in whole or in part; or is owned, in whole or in part, or is a subsidiary of, any other bidder.

(d) The fact that a bidder (1) has published price lists, rates or tariffs covering items included in the submitted bid; (2) has informed prospective customers of proposed or pending publication of new or revised price lists for such items; or (3) has sold the same items to other customers at the same prices being bid, does not constitute a disclosure within the meaning of Subparagraph 9(a).

(e) Any bid submitted by a corporate bidder shall be deemed to have been authorized by the Board of Directors of the bidder and such authorization shall be deemed to include the signing and submission of the bid and the execution of the affidavit required in (b) above as the acts and deeds of the corporation.

12. SUBSTANCE ABUSE AND DRUG-FREE WORK PLACE

The Contractor agrees to comply with Section 33.1-58 of the Code of the City of Norfolk, Virginia, 1996, as amended, regarding substance Abuse and Drug-Free Work Place Policy.

Bids to be opened:	2:00 p.m., Wednesday May 4, 2016
Work to be Substantially Completed:	180 consecutive calendar days
Liquidated Damages:	\$350.00 per day
Performance Bond:	100%
Payment Bond:	100%
Bid Bond:	5%

BID FORM

To: City of Norfolk
 Department of Public Works
 810 Union Street, Room 700
 Norfolk, Virginia 23510

A. UNIT PRICE BID

In compliance with the Invitation for Bids and Instructions to Bidders, the General Conditions of the Contract, the contract drawings and specifications titled **PARKDALE CHANNEL IMPROVEMENTS** and all addenda issued to date, all of which are part of this bid, the undersigned hereby proposes to furnish all items, including materials, labor, and equipment called for by, and in strict accordance with Contract Documents and the list of unit prices hereto attached and referred to as Attachment A, for the sum of:

\$ _____
 (Use words)
 Dollars (\$ _____)

B. ADDENDA

The undersigned acknowledges receipt of the following addenda:

Addendum No. _____ Dated: _____

Addendum No. _____ Dated: _____

Addendum No. _____ Dated: _____

We agree to enter into a contract with the City of Norfolk, Virginia within ten (10) days of the award of same to us for the price named in our bid.

It is expressly agreed by us that the City of Norfolk, Virginia shall have the right to reject any and all bids and to waive any informalities.

In default of the performance on our part of the conditions of bid, our failure to enter into a contract with the City of Norfolk, Virginia, within the time above set, we herewith furnish a certified check, cashier's check (or Bid Bond) in the amount of \$_____, which shall be forfeited as liquidated damages to the City of Norfolk, Virginia, but otherwise the said check or Bid Bond shall be returned.

We agree to begin work at any time after receipt of the Notice to Proceed from the Director of Public Works and be substantially complete of all the Work **within One Hundred Eighty (180) consecutive calendar days**.

C. I/We elect to utilize the Escrow Account Procedure described in the provision of this bid if determined to be the successful low bidder.

_____ (write “Yes” or “No”).

_____ Bid total does not qualify for escrow account option

D. Norfolk Businesses: It is the policy of the City to support Norfolk businesses and workforce development and it encourages companies with corporate offices in Norfolk and which employ Norfolk residents to compete for City contracts. Bidders are asked, as part of their submission, to advise of their Norfolk location and detail their employment of Norfolk residents.

E. Equal Opportunity Business Development: It is the policy of the City of Norfolk to facilitate the establishment, preservation, and strengthening of small businesses and businesses owned by women and minorities and to encourage their participation in the City’s procurement activities. Toward that end, the City encourages these firms to compete and encourages non-minority firms to provide for the participation of small businesses and businesses owned by women and minorities through partnerships, joint ventures, subcontracts, and other contractual opportunities. Bidders are asked, as part of their submission, to describe any planned use of such businesses.

1. Is your firm a minority owned business? Yes ___ No ___ If yes, please check the appropriate category: ___ African American (male), ___ African American (female), ___ Caucasian (female), ___ Hispanic (male), ___ Hispanic (female), ___ Asian American (male), ___ Asian American (female), ___ American Indian (male), ___ American Indian (female), ___ Eskimo (male), ___ Eskimo (female), ___ Aleut (male), ___ Aleut (female), ___ Other (male), ___ Other (female).

2. Subcontracting Opportunities for Small, Women Owned, Minority Business Enterprises and Disabled Veterans. All prime contractors are requested to furnish the following information regarding participation of small, women owned, minority business enterprises and disabled veterans:

a. Proposed Name of your Subcontractor(s):

b. Proposed Minority Category of Subcontractor(s) – please check the appropriate category(ies):

___ African American (male)	___ African American (female)
___ Hispanic (male)	___ Hispanic (female)
___ Asian American (male)	___ Asian American (female)
___ American Indian (male)	___ American Indian (female)
___ Eskimo (male)	___ Eskimo (female)
___ Aleut (male)	___ Aleut (female)
___ Other (male)	___ Caucasian (female)
	___ Other (female)

c. Proposed Amount of Subcontracts:

d. Proposed Description of commodity (i.e. masonry, hauling, insulation, etc.):

e. Proposed Description of Project:

f. Proposed Total value of awards to all subcontractors:

g. Proposed Total Number of minority subcontracts awarded:

h. If you do not propose the use of any subcontractors, please check here ____.

F. The undersigned has read all sections under “Instructions to Bidders.”

G. **CONTRACTOR’S REGISTRATION AND SIGNATURE**

Registered Virginia Contractor Class and No. _____

City of Norfolk Business License No. _____

Contractor _____ Signed _____ (SEAL)

Date _____ Title _____

NOTE: If Bidder is a corporation, write state of incorporation under signature and if a partnership, give full names of all partners.

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AFFIDAVIT

City of Norfolk, Virginia project: **Parkdale Channel Improvements**

Bid Date: _____

STATE OF VIRGINIA

(City/County)

This day personally appeared before the undersigned, a Notary Public in and for the City/County and State aforesaid, _____, who having been first duly sworn

(name of owner, partner, president)

according to law, did depose and aver as follows:

(a) That he is _____
(owner, partner, president, etc.)

of _____
(insert name of contractor)

(b) That he is personally familiar with the bid of _____
(insert name of contractor)
submitted in connection with the above captioned City of Norfolk project.

© That said bid was formulated and submitted in good faith as the true bid of said bidder.

(d) That said bid in no manner violates the Sherman Antitrust Act (15 U.S.C. '1 *et seq.*), The Virginia Antitrust Act (§59.1-9.1 through §59.1-9.17 Code of Virginia, (1950), as amended) or the Conspiracy to Rig Bids to Government Act (§59.1-68.8, Code of Virginia (1950), as amended.

And further this deponent saith not.

Affiant

Subscribed and sworn to before me this _____ day of _____, 20____.

My commission expires: _____, 20____

Notary Public

MAILING ADDRESS, FAX NO., TELEPHONE NO., AND EMAIL ADDRESS:

IF CORPORATION, PROVIDE NAME AND MAILING ADDRESS AS REQUIRED BELOW

PRESIDENT

SECRETARY

TREASURER

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IF PARTNERSHIP, PROPRIETORSHIP, OR OTHER FIRM, PROVIDE NAME AND MAILING ADDRESS OF EACH PARTNER, PROPRIETOR, OR MEMBER OF FIRM.

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COMPLIANCE WITH STATE LAW
AUTHORIZATION TO TRANSACT BUSINESS IN THE COMMONWEALTH

I. CERTIFICATION

The Bidder/Vendor (Please fill in with your enterprise's complete name)___

certifies that it is organized or authorized to transact business in the Commonwealth pursuant to Title 13.1 or Title 50.

The identification number issued to Bidder/Vender by the State Corporation Commission: _____

Bidder/Vendor that is not required to be authorized to transact business in the Commonwealth as a foreign business entity under Title 13.1 or Title 50 or as otherwise required by law shall describe why it is not required to be so authorized___

Bidder/Vendor:_____

Signed: _____

Title: _____

Date: _____

II. INSTRUCTIONS

- a. The Bidder/Vendor shall provide immediate written notice to the Contracting Officer if, at any time prior to contract award, the Vendor learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.
- b. A certification that any of the items in paragraph (a) of this provision exists will not necessarily result in withholding of an award under this solicitation. However, the certification will be considered in connection with a determination of the Bidder's/Vendor's responsibility. Failure of the Bidder/Vendor to furnish a certification or

provide such additional information as requested by the appropriate City purchasing official may render the Bidder/Vendor non-responsible.

c. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render, in good faith, the certification required by paragraph (a) of this provision. The knowledge and information of a Bidder/Vendor is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

d. The certification in paragraph (a) of this provision is a material representation of fact upon which reliance was placed when making award. If it is later determined that the Bidder/Vendor knowingly rendered an erroneous certification, in addition to other remedies available to the City, the appropriate City purchasing official may terminate the contract resulting from this solicitation for default.

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SCHEDULE OF UNIT PRICES
for
PARKDALE CHANNEL IMPROVEMENTS
OWNER: CITY of NORFOLK, VIRGINIA

The unit prices have been computed in accordance with Subparagraph 7.3.3.2 of the General Conditions. Bidder acknowledges that estimated quantities are not guaranteed, and are solely for the purpose of comparison of Bids, and final payment for all Unit Price Bid items will be based on actual quantities provided, determined as provided in the Contract Documents. The prices quoted shall include, without exception, all materials, labor, equipment, appliances, clean-up, applicable sales, use and other taxes, building permits or fees, and the Contractor's labor, overhead, profit, mobilization and other mark-ups, and in full accordance with the Specifications. Include allowance for waste where appropriate. The unit prices shall be maintained throughout the contract period. Unit prices shall be used in determining additions or deductions from the TOTAL CONTRACT AWARD amount in the event of changes in the work.

ITEM	DESCRIPTION	UNIT	QTY	UNIT PRICE	EXTENSION
1	Install and Remove Temporary Construction Entrance (Section 02276)	LS	1		
2	Construction Staking and Surveying (Section 02100)	LS	1		
3	Construction and Tree Protection Fencing (Section 02100)	LF	1,920		
4	Temporary Rock Check Dam (Section 02276)	EA	1		
5	Sediment Fence (Section 02276)	LF	440		
6	Baseflow Bypass and Dewatering Pumping System (Section 02140)	LS	1		
7	Clearing and Grubbing (Section 02100)	SY	1,000		
8	Demolition and Removal of Retaining Wall, Fence, and Miscellaneous Structures (Section 02050)	LS	1		
9	Selective Tree Removal Between 8-15" DBH (Section 02100)	EA	7		
10	Selective Large Tree Removal > 15" DBH (Section 02100)	EA	5		
11	Install Polyethylene Drain Pipe (Section 02710)	LF	160		
12	Replace Flared End Section (Section 02612)	EA	1		
13	Remove and Relocate Riprap (Section 02271)	SY	30		
14	General Excavation and Rough Grading (Section 02200)	CY	1,200		

Attachment A-1

ITEM	DESCRIPTION	UNIT	QTY	UNIT PRICE	EXTENSION
15	Salvage and Place Topsoil (Section 02955)	CY	200		
16	Channel Fine Grading (Section 02200)	LF	540		
17	Remove / Dispose of Excess Cut Materials (Section 02200)	CY	300		
18	Install Log Vanes (Section 02273)	EA	5		
19	Install Natural Fiber Matting on Channel Banks (Section 02955)	SY	600		
20	Plantings - Trees (Section 02930)	EA	130		
21	Plantings - Shrubs (Section 02930)	EA	50		
22	Plantings – Herbaceous (Section 02930)	EA	200		
23	Temporary Seeding and Mulching (Section 02276)	SY	6,000		
24	Turf Grass Seeding and Mulching (Section 02930)	SY	400		
25	Wetland Areas Seeding and Mulching (Section 02955)	SY	1,850		
26	Riparian Areas Seeding and Mulching (Section 02930)	SY	1,850		
27	Landscaping (Section 02901)	LS	1		
28	Vegetation Maintenance and Warranty (Section 01740)	LS	1		
29	Replace 6' Tall Chain Link Fence (Section 02830)	LF	180		
30	Replace 4' Tall Wood Board Fence (Section 02835)	LF	180		
31	Install Post and Chain Fence (Plan Sheet C-7)	LF	660		
32	Install Conservation Easement Signs (Plan Sheet C-5)	EA	9		
33	Curb Replacement (Plan Sheet C-7)	LF	20		
34	Miscellaneous Work and Cleanup (Section 02901)	LS	1		
35	Mobilization (Section 01025)	LS	1		
TOTAL BID					\$

THE CITY OF NORFOLK, VIRGINIA

OFFICE OF THE CITY MANAGER

CONTRACT

THIS AGREEMENT, made as of the ____ day of _____ in the year **2016**, is between the **City of Norfolk, Virginia**, acting by and through the City Manager, hereinafter styled the **City**, and

party of the second part, hereinafter styled the **Contractor**.

WITNESSETH, That whereas the City has awarded to the Contractor, in accordance with his bid of **May 4, 2016**, a contract for **PARKDALE CHANNEL IMPROVEMENTS** as described in the specifications and drawings prepared therefor by **CDM Smith, 5400 Glenwood Ave., Suite 500, Raleigh, North Carolina 27612**, and on file in the office of the Director of Public Works of the City of Norfolk, Virginia.

ARTICLE 1 - THE WORK OF THIS CONTRACT

The Contractor shall fully execute the Work described in the Contract Documents, except to the extent specifically indicated in the Contract Documents to be the responsibility of others.

ARTICLE 2 - DATE OF COMMENCEMENT AND COMPLETION TIMES

The Contractor further agrees to begin Work at such a date as the Director, Department of Public Works, Norfolk, Virginia, shall notify it to begin via a Notice to Proceed letter, and that it will achieve Substantial Completion of the entire Work in accordance with Paragraph 9.8 of the General Conditions not later than **One Hundred Eighty (180) consecutive calendar days** of the Notice to Proceed date as well as achieve Final Completion in accordance with Paragraph 9.10 of the General Conditions not later than **Two Hundred Ten (210) consecutive calendar days** of the Notice to Proceed date.

ARTICLE 3 - LIQUIDATED DAMAGES

The Contractor and the City recognize that time is of the essence of this Agreement. In view of the difficulty of ascertaining the loss which the City will suffer by reason of delay in the performance of the Work, the Contractor and the City hereby agree upon as the liquidated damages set below that the City will suffer by reason of delay and/or default, and not as a penalty. Further, the City shall deduct and retain the amount of such liquidated damages out of the moneys which may be due or become due to the Contractor under this Agreement.

Accordingly, should the Contractor fail to achieve Substantial Completion the aforesaid Work in accordance with the contract documents to the satisfaction and approval of the Engineer within the time stipulated in Article 2 above, the Contractor shall pay to the City of Norfolk, Virginia, **Three Hundred Fifty Dollars (\$350.00)** for every calendar day beyond the time set for substantial completion.

After Substantial Completion, if the Contractor shall neglect, refuse, or fail to complete the remaining Work within the contract time or any proper extension thereof granted by the City, the Contractor shall pay the City **Three Hundred Fifty Dollars (\$350.00)** for every calendar day beyond the time set for final completion until the Work is completed and ready for final payment.

ARTICLE 4 - CONTRACT PRICE

The City shall pay the Contractor for completion of the Work in accordance with the Contract Documents an amount in current funds equal to the sum of the amounts determined below subject to additions and deductions as provided in the Contract Documents:

For all Unit Price Work, an amount equal to the sum of the established unit prices hereto attached and referred to as Attachment A, for:

_____ **Dollars and** _____ **Cents (\$**_____ **)**

As provided in Subparagraph 7.3.3.2 of the General Conditions of the Contract for Construction (as modified), estimated quantities are not guaranteed, and determinations of actual quantities and classifications are to be made by the Engineer's recommendation to the City.

ARTICLE 5 - PAYMENTS

Based upon applications for payment submitted to the Engineer by the Contractor and certificates for payment issued by the Engineer, the City shall make monthly progress payments on account of the contract sum to the Contractor as provided in the conditions of the contract as follows:

The City will pay the Contractor, on or about the thirtieth calendar day after receipt of a Request for Payment, ninety-five percent (95%) of the portion of the contract sum properly allocable to labor, materials, and equipment incorporated in the Work and ninety-five percent (95%) of the portion of the contract sum properly allocable to materials and equipment suitably stored at the site or at some other location agreed upon in writing by the parties, less the aggregate of previous payments in each case; provided, however, that the owner, at any time after fifty percent (50%) of the Work has been completed, if it finds that satisfactory progress is being made, may make any of the remaining partial payments in full; and upon final completion, a sum sufficient to increase the total payment to one-hundred percent (100%) of the contract sum, less such retainage as the Engineer shall determine for all incomplete Work and unsettled claims. But such full payment or payments shall in no manner be construed as reducing the amount of the bond, or the liability of the surety thereon, until final completion and acceptance of all items of Work herein set forth.

The action of the Engineer by which the Contractor is to be bound according to the terms of this contract shall be that evidenced by his final estimate and certificate, all prior estimates upon which ninety-five percent (95%) or more may be made, being merely payment on account, and not payments for accepted Work, and subject to the correction of such final estimate, which may be made with notice to the Contractor.

ARTICLE 6 - CONTRACTOR'S REPRESENTATION

To induce the City to enter into this Agreement, the Contractor makes the following representations:

A. Contractor has examined and carefully studied the Contract Documents and other related data identified in the Bidding Documents.

B. Contractor has visited the Site and become familiar with and is satisfied as to the general, local, and site conditions that may affect cost, progress, and performance of the Work.

C. Contractor is familiar with and is satisfied as to all federal, state, and local laws and regulations that may affect cost, progress, and performance of the Work.

D. Contractor has carefully studied all: (1) reports of explorations and tests of subsurface conditions at or contiguous to the Site and all drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Site which have been provided with the Contract Documents, and (2) reports and drawings of a hazardous environmental condition, if any, at the site, which have been provided with the Contract Documents.

E. Contractor has obtained and carefully studied (or assumes responsibility for having done so) all additional or supplementary examinations, investigations, explorations, tests, studies, and data concerning conditions (surface, subsurface, and underground facilities) at or contiguous to the Site which may affect cost, progress, or performance of the Work.

F. Contractor is aware of the general nature of Work to be performed by City and others at the Site that relates to the Work as indicated in the Contract Documents.

G. Contractor has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Contractor has discovered in the Contract Documents, and the written resolution thereof by Engineer is acceptable to Contractor

H. The Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.

I. Contractor hereby certifies that it has familiarized itself with Sections 33.1-86 through 33.1-93 of the Code of the City of Norfolk, Virginia, 1979, as amended, entitled "Ethics in Public Contracting," including the additional statutes set forth in Section 33.1-86 thereof, and further that all amounts received by the Contractor pursuant to this Agreement are proper and in accordance therewith.

J. Contractor hereby certifies that at all times during which any term of this Agreement is in effect, it does not and shall not knowingly employ any unauthorized alien. For purposes of this section, an "unauthorized alien" shall mean any alien who is neither lawfully admitted for permanent residence in the United States nor authorized to be employed by either Title 8, section 1324a of the United States Code or the U.S. Attorney General.

K. Contractor hereby represents that it is organized as a stock or non-stock corporation, limited liability company, business trust, or limited partnership or registered as a registered limited liability partnership and is authorized to transact business in the Commonwealth as a domestic or foreign business entity if so required by Title 13.1 or Title 50 or as otherwise required by law.

ARTICLE 7 - CONTRACT DOCUMENTS

The Contract Documents consist of the following:

- a. Invitation for Bids
- b. Instructions to Bidders
- c. Bid Form
- d. Bid Bond
- e. Contract
- f. Performance Bond
- g. Payment Bond
- h. AIA A201-2007, "General Conditions of the Contract for Construction" (as modified)
- i. Certificate of Insurance
- j. Notice of Award
- k. Notice to Proceed
- l. Change Orders (if any)
- m. Other Documents as may be required by law or appended hereto:
- n. Plans and Drawings prepared by: **CDM Smith, 5400 Glenwood Ave., Suite 500, Raleigh, North Carolina 27612**
- o. Specifications prepared or issued by: **CDM Smith, 5400 Glenwood Ave., Suite 500, Raleigh, North Carolina 27612**
- p. Addendum (as listed in Bid Form)

Witness the following signatures and seals:

(_____)

Witness: _____

By: _____

Written Signature

Printed Signature

Seal
If
Incorporated

Title

Date

Virginia State Contractor's License No. _____

City of Norfolk Business License No. _____

Contents Approved:

Director of Public Works

Approved as to form and correctness:

Deputy City Attorney

CITY OF NORFOLK, VIRGINIA

By _____

City Manager

Attest: _____

City Clerk

Certification of Funds

I hereby certify that the money required for this contract (agreement, obligation or expenditure) is in the City Treasury to the credit of the fund from which it is to be drawn, and not appropriated for any other purpose.

Account:

Amount:

Contract No.:

Vendor Code:

Acting Director of Finance / Date

End of Page

CITY OF NORFOLK, VIRGINIA

ESCROW AGREEMENT

THIS AGREEMENT, made and entered into this _____ day of _____, 20____, by,
between and among the City of Norfolk, Virginia (hereinafter "City"), a municipal corporation chartered
by the Commonwealth of Virginia; _____ (hereinafter "Contractor"),

(Name of Bank)

(Address of Bank)

a trust company, bank, or savings and loan institution with its principal office located in the
Commonwealth of Virginia (hereinafter referred to collectively as "Bank") and

(Name of Surety)

(Address of Surety)

(hereinafter "Surety") provides:

I.

The City and the Contractor have entered into a contract with respect to City of Norfolk Bid No. _____, described as _____ ("the contract"). This Agreement is pursuant to, but in no way amends or modifies, the contract. Payments made hereunder or the release of funds from escrow shall not be deemed approval or acceptance of performance by the Contractor.

II.

In order to assure full and satisfactory performance by the Contractor of its obligations under the contract, the City is required thereby to retain certain amounts otherwise due the Contractor. The Contractor has, with the approval of the City, elected to have these retained amounts held in escrow by the Bank. This agreement sets forth the terms of the escrow. The Bank shall not be deemed a party to, bound by, or required to inquire into the terms of, the contract or any other instrument or agreement between the City and the Contractor.

III.

The City shall from time to time pursuant to its contract pay to the Bank amounts retained by it under the contract. Except as to amounts actually withdrawn from escrow by the City, the Contractor shall look solely to the Bank for the payment of funds retained under the contract and paid by the City to the Bank.

The risk of loss by diminution of the principal of any funds invested under the terms of this contract shall be solely upon the Contractor.

Funds and securities held by the Bank pursuant to this Escrow Agreement shall not be subject to levy, garnishment, attachment, lien, or other process whatsoever. Contractor agrees not to assign, pledge, discount, sell or otherwise transfer or dispose of his interest in the escrow account or any part thereof, except to the Surety.

IV.

Upon receipt of checks or warrants drawn by the City and made payable to it as escrow agent, the Bank shall promptly notify the Contractor, negotiate the same and deposit or invest and reinvest the proceeds in approved securities in accordance with the written instructions of the Contractor. In no event shall the Bank invest the escrowed funds in any security not approved.

V.

The following securities, and none other, are approved securities for all purposes of this Agreement:

- (1) United States Treasury Bonds, United States Treasury Notes, United States Treasury Certificates of Indebtedness or United States Treasury Bills,
- (2) Bonds, notes and other evidences of indebtedness unconditionally guaranteed as to the payment of principal and interest by the United States,
- (3) Bonds or notes of the Commonwealth of Virginia,
- (4) Bonds of any political subdivision of the Commonwealth of Virginia, if such bonds carried, at the time of purchase by the Bank or deposit by the Contractor, a Standard and Poor's or Moody's Investors Service rating of at least "A", and
- (5) Certificates of deposit issued by commercial Banks located within the Commonwealth, including, but not limited to, those insured by the Bank and its affiliates,
- (6) Any bonds, notes, or other evidences of indebtedness listed in Sections (1) through (3) may be purchased pursuant to a repurchase agreement with a bank, within or without the Commonwealth of Virginia having a combined capital, surplus and undivided profit of not less than \$25,000,000, provided the obligation of the Bank to repurchase is within the time limitations established for investments as set forth herein. The repurchase agreement shall be considered a purchase of such securities even if title, and/or possession of such securities is not transferred to the Escrow Agent, so long as the repurchase obligation of the Bank is collateralized by the securities themselves, and the securities have on the date of the repurchase agreement a fair market value equal to at least 100% of the amount of the repurchase obligation of the Bank, and the securities are held by a third party, and segregated from other securities owned by the Bank.

No security is approved hereunder which matures more than five (5) years after the date of its purchase by the Bank or deposit by the Contractor.

VI.

The Contractor may from time to time withdraw the whole or any portion of the escrowed funds by depositing with the Bank approved securities in an amount equal to, or in excess of, the amount so withdrawn. Any securities so deposited or withdrawn shall be valued at such time of deposit or withdrawal at the lower or par or market value, the latter as determined by the Bank. Any securities so deposited shall thereupon become a part of the escrowed fund.

Upon receipt of a direction signed by the City Manager or Assistant City Manager, the Bank shall pay the principal of the fund, or any specified amount thereof, to the City of Norfolk for the account of the project. Such payment shall be made in cash as soon as is practicable after receipt of the direction.

Upon receipt of a direction signed by the City Manager or Assistant City Manager or Director of Public Works or Director of Utilities, the Bank shall pay and deliver the principal of the fund, or any specified amount thereof, to the Contractor, in cash or in kind, as may be specified by the Contractor. Such payment and delivery shall be made as soon as is practicable after receipt of the direction. The Contractor consents to have the Bank provide to the City statements of any accounts in which escrowed funds are deposited pursuant to this Escrow Agreement.

VII.

For its services hereunder the Bank shall be entitled to a reasonable fee in accordance with its published schedule of fees or as may be agreed upon by the Bank and the Contractor. Such fee and any other costs of administration of this Agreement shall be paid from the income earned upon the escrowed fund and, if such income is not sufficient to pay the same, by the Contractor.

VIII.

The net income earned and received upon the principal of the escrowed fund shall be paid over to the Contractor in quarterly or more frequent installments. Until so paid or applied to pay the Bank's fee or any other costs of administration such income shall be deemed a part of the principal of the fund.

IX.

The Surety undertakes no obligation hereby but joins in this Agreement for the sole purpose of acknowledging that its obligations as surety for the Contractor's performance of the contract are not affected hereby.

WITNESS the following signatures, all as of the day and year first above written.

CITY OF NORFOLK, VIRGINIA

By: _____
City Manager

ATTEST:

City Clerk

Contractor

By: _____
Officer, Partner, or Owner

_____(Seal)

APPROVED AS TO FORM AND CORRECTNESS:

Deputy City Attorney

_____(Bank)

_____(Account Number)

By: _____
Signature

Name: _____ Title: _____

_____(Surety)

By: _____
Signature

Name: _____ Title: _____

PERFORMANCE BOND

Bond No. _____
Amount: \$ _____

KNOW ALL PERSONS BY THESE PRESENTS, that _____ of _____, hereinafter called the Contractor and _____, a corporation duly organized and existing under and by virtue of the laws of the State of _____, hereinafter called the Surety, and authorized to transact business within the Commonwealth of Virginia as the Surety, are held and firmly bound unto the City of Norfolk as Owner, in the sum of _____ **Dollars and ____ Cents** (\$_____.__), lawful money of the United States of America, for payment of which, well and truly be made to the Owner, the Contractor and the Surety bind themselves and each of their heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents as follows:

THE CONDITION OF THE ABOVE OBLIGATION IS SUCH THAT:

WHEREAS, the Contractor has executed and entered into a certain Agreement, hereto attached, with the Owner dated _____, 2016 for

PARKDALE CHANNEL IMPROVEMENTS

NOW THEREFORE, if the Contractor, and its successors and assigns, shall at all times duly, promptly, and faithfully perform the Work and any alteration in or addition to the obligations of the Contractor arising thereunder, including the matter of infringement, if any, of patents or other proprietary rights, and shall assure all guarantees against defective workmanship and materials, including the guarantee period following final completion by the Contractor and final acceptance by the Owner and comply with all the covenants therein contained in the Specifications, Drawings, and other Contract Documents required to be performed by the Contractor, in the manner and within the times provided in the Agreement, and shall fully indemnify and save harmless the Owner from all costs and damage which it may suffer by reason or failure to do so, and shall fully reimburse and repay it all outlay and expenses which it may incur in making good any default, and reasonable counsel fees incurred in the prosecution of or defense of any action arising out of or in connection with any such default, then this obligation shall be void; otherwise to remain in full force and effect.

PROVIDED, HOWEVER, that the Surety, for value received, for itself and its successors and assigns, hereby stipulates and agrees that no change, extension of time, alteration, or addition to the terms of the Contract Documents or to the Work to be performed thereunder, or payment thereunder before the time required therein, or waiver of any provision thereof, or assignment, subletting or transfer thereof or any part thereof, shall in any way affect its obligation on this Bond, and it does hereby waive notice of any such change, extension of time, alteration, addition to the terms of the Contract Documents or any such payment, waiver, assignment, subcontract or transfer.

PROVIDED, FURTHER, that no final settlement between the Owner and the Contractor shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.

Whenever Contractor shall be declared by Owner to be in default under the Contract, the Owner having performed Owner's obligations thereunder, the Owner shall have the right, at its option, to require the Surety to promptly proceed to remedy the default within 30 days of notice by proceeding or procuring others to proceed with completing the Agreement with its terms and conditions including the correction of any defective work and the provision of safety measures required as the result of such default; and all reserves, deferred payments, and other funds provided by the Agreement to be paid to Contractor shall be paid to Surety at the same times and under the same conditions as by the terms of that Agreement such fund would have been paid to Contractor had the Agreement been performed by Contractor; and Surety shall be entitled to such funds in preference to any assignee of Principal of any adverse claimant. Notwithstanding the above, the Owner shall have the right, with the approval of the Surety which shall

not be unreasonably withheld, to take over and assume completion of the Agreement and be promptly paid in cash by the Surety for the cost of such completion less the balance of the Contract price.

IN WITNESS WHEREOF, all above parties bounded together have executed this instrument this _____ day of _____, **2016**, the name and corporate seal of each corporate party being hereto affixed and those presents duly signed by its undersigned representative, pursuant to authority of its governing body.

CONTRACTOR

(_____)

By: _____(Seal)

Printed Name: _____

Title: _____

Attest

SURETY

By: _____(Seal)

Attest

APPROVED AS TO FORM: _____, 2016

City of Norfolk, OWNER

By: _____
Deputy City Attorney

NOTE: Date of Bond shall not be prior to the date of the Agreement. If the Contractor is a partnership, all partners shall execute the Bond.

IMPORTANT: The Surety named on this Bond shall be one who is licensed to conduct business in the Commonwealth of Virginia, and named in the current list of Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies, as published in Circular 570 (amended) by the Audit Staff Bureau of Accounts, U.S. Treasury Department. All Bonds signed by an agent shall be accompanied by a certified copy of the authority to act for the Surety at the time of signing of this Bond.

End of Page

PAYMENT BOND

Bond No. _____

Amount: \$ _____

KNOW ALL PERSONS BY THESE PRESENTS, that _____ of _____, hereinafter called the Contractor and _____, a corporation duly organized and existing under and by virtue of the laws of the State _____, hereinafter called the Surety, and authorized to transact business within the Commonwealth of Virginia as the Surety, are held and firmly bound unto the City of Norfolk as Owner, in the sum of _____ **Dollars and ____ Cents** (\$ _____), lawful money of the United States of America, for payment of which, well and truly be made to the Owner, the Contractor and the Surety bind themselves and each of their heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents as follows:

THE CONDITION OF THE ABOVE OBLIGATION IS SUCH THAT:

WHEREAS, the Contractor has executed and entered into a certain Agreement, hereto attached, with the Owner dated _____, 2016 for

PARKDALE CHANNEL IMPROVEMENTS

NOW THEREFORE, if the Contractor shall promptly make payments to all persons, firms, subcontractors, and corporations furnishing materials for or performing labor in the prosecution of the Work provided for in the Agreement, and any authorized extension or modification thereof, including all amounts due for materials, lubricants, oil, gasoline, repairs on machinery, equipment, and tools consumed, used or rented in connection with the construction of the Work, and all insurance premiums on the Work, and for all labor performed in the Work, whether by Subcontractor or otherwise, then this obligation shall be void, otherwise to remain in full force and effect.

PROVIDED, HOWEVER, that the Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration, or addition to the terms of the Contract Documents or to the Work to be performed thereunder, shall in any way affect its obligation on this Bond, and it does hereby waive notice of any such change, extension of time, alteration, or addition to the terms of the Contract Documents.

PROVIDED, FURTHER, that no final settlement between the Owner and the Contractor shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.

IN WITNESS WHEREOF, all above parties bounded together have executed this instrument this ____ day of _____, **2016**, the name and corporate seal of each corporate party being hereto affixed and those presents duly signed by its undersigned representative, pursuant to authority of its governing body.

CONTRACTOR

(_____)

By: _____(Seal)

Printed Name: _____

Title: _____

Attest

SURETY

By: _____(Seal)

Attest

APPROVED AS TO FORM: _____, 2016

City of Norfolk, OWNER

By: _____
Deputy City Attorney

NOTE: Date of Bond shall not be prior to the date of the Agreement. If the Contractor is a partnership, all partners shall execute the Bond.

IMPORTANT: The Surety named on this Bond shall be one who is licensed to conduct business in the Commonwealth of Virginia, and named in the current list of Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies, as published in Circular 570 (amended) by the Audit Staff Bureau of Accounts, U.S. Treasury Department. All Bonds signed by an agent shall be accompanied by a certified copy of the authority to act for the Surety at the time of signing of this Bond.

End of Page



AIA®

Document A201™ – 2007

General Conditions of the Contract for Construction

for the following PROJECT:

(Name and location or address)

Parkdale Channel Improvements

THE CITY OF NORFOLK, a municipal corporation of the Commonwealth of Virginia,

hereinafter called the "City" or the OWNER:

(Name, legal status and address)

This document has important legal consequences.

Consultation with an attorney is encouraged with respect to its completion or modification.

THE ARCHITECT:

(Name, legal status and address)

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ARTICLE 1 GENERAL PROVISIONS

§ 1.1 BASIC DEFINITIONS

§ 1.1.1 THE CONTRACT DOCUMENTS

The Contract Documents are enumerated in the Agreement between the Owner and Contractor (hereinafter the Agreement) and consist of the Agreement, Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, Addenda issued prior to execution of the Contract, other documents listed in the Agreement and Modifications issued after execution of the Contract. A Modification is (1) a written amendment to the Contract signed by both parties, (2) a Change Order, (3) a Construction Change Directive or (4) a written order for a minor change in the Work issued by the Architect. Unless specifically enumerated in the Agreement, the Contract Documents do not include the advertisement or invitation to bid, Instructions to Bidders, sample forms, other information furnished by the Owner in anticipation of receiving bids or proposals, the Contractor's bid or proposal, or portions of Addenda relating to bidding requirements.

§ 1.1.2 THE CONTRACT

The Contract Documents form the Contract for Construction. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations or agreements, either written or oral. The Contract may be amended or modified only by a Modification. The Contract Documents shall not be construed to create a contractual relationship of any kind (1) between the Contractor and the Architect or the Architect's consultants, (2) between the Owner and a Subcontractor or a Sub-subcontractor, (3) between the Owner and the Architect or the Architect's consultants or (4) between any persons or entities other than the Owner and the Contractor. The Architect shall, however, be entitled to performance and enforcement of obligations under the Contract intended to facilitate performance of the Architect's duties.

§ 1.1.3 THE WORK

The term "Work" means the construction and services required by the Contract Documents, whether completed or partially completed, and includes all other labor, materials, equipment and services provided or to be provided by the Contractor to fulfill the Contractor's obligations. The Work may constitute the whole or a part of the Project.

§ 1.1.4 THE PROJECT

The Project is the total construction of which the Work performed under the Contract Documents may be the whole or a part and which may include construction by the Owner and by separate contractors.

§ 1.1.5 THE DRAWINGS

The Drawings are the graphic and pictorial portions of the Contract Documents showing the design, location and dimensions of the Work, generally including plans, elevations, sections, details, schedules and diagrams.

§ 1.1.6 THE SPECIFICATIONS

The Specifications are that portion of the Contract Documents consisting of the written requirements for materials, equipment, systems, standards and workmanship for the Work, and performance of related services.

§ 1.1.7 INSTRUMENTS OF SERVICE

Instruments of Service are representations, in any medium of expression now known or later developed, of the tangible and intangible creative work performed by the Architect and the Architect's consultants under their respective professional services agreements. Instruments of Service may include, without limitation, studies, surveys, models, sketches, drawings, specifications, and other similar materials.

§ 1.1.8 INITIAL DECISION MAKER

The Initial Decision Maker is the person identified in the Agreement to render initial decisions on Claims in accordance with Section 15.2 and certify termination of the Agreement under Section 14.2.2.

§ 1.2 CORRELATION AND INTENT OF THE CONTRACT DOCUMENTS

§ 1.2.1 The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Contractor. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all; performance by the Contractor shall be required only to the extent consistent with the Contract Documents and reasonably inferable from them ~~as being necessary to produce the indicated results, or from prevailing custom or trade usage as being required to produce the intended result whether or not specifically called for at no additional cost to the Owner.~~

§ 1.2.1.1 Should any conflict be found in the Contract Documents, the Architect/Engineer shall interpret or construe the Contract Documents so as to secure the most substantial and complete performance of the Work. In other words, the better quality or great quantity of work shall be provided in accordance with the Architect/Engineer's interpretation. The Architect/Engineer's decision in this matter shall be final.

§ 1.2.2 Organization of the Specifications into divisions, sections and articles, and arrangement of Drawings shall not control the Contractor in dividing the Work among Subcontractors or in establishing the extent of Work to be performed by any trade.

§ 1.2.3 Unless otherwise stated in the Contract Documents, words that have well-known technical or construction industry meanings are used in the Contract Documents in accordance with such recognized meanings.

§ 1.2.4 Wherever in the Contract Documents the words "as approved", "as directed", "as required", "acceptable", "satisfactory" and words of like import are used with references to the Work or its performance, and without further qualification, it shall mean as approved, as directed, as required by the Architect/Engineer and acceptable, satisfactory, etc. to the Architect/Engineer.

§ 1.2.5 The general character of the detailed work is shown on the Drawings, but minor modifications may be made on the shop drawings or mock-ups. Any details shall be worked out in relation to their location and their connection to other parts of the Work. Where on any drawings a portion of the Work is drawn out and the remainder is indicated in outline, the parts drawn out also apply to all other like portions of the Work. Where details or conditions are indicated but started only, such details or conditions shall be continued throughout the courses or parts in which they occur and shall also apply to all other similar parts in the Work unless otherwise indicated or specifically noted.

§ 1.3 CAPITALIZATION

Terms capitalized in these General Conditions include those that are (1) specifically defined, (2) the titles of numbered articles or (3) the titles of other documents published by the American Institute of Architects.

§ 1.4 INTERPRETATION

In the interest of brevity the Contract Documents frequently omit modifying words such as "all" and "any" and articles such as "the" and "an," but the fact that a modifier or an article is absent from one statement and appears in another is not intended to affect the interpretation of either statement.

Wherever the term "Architect" appears in this Agreement, it shall mean either Architect or Engineer.

§ 1.5 OWNERSHIP AND USE OF DRAWINGS, SPECIFICATIONS AND OTHER INSTRUMENTS OF SERVICE

§ 1.5.1 The drawings, specifications and other documents, including those in electronic form, prepared by the Architect and the Architect's consultants are Instruments of Service through which the Work to be executed by the Contractor is described. The Contractor may retain one record set. Neither the Contractor nor any Subcontractor, Sub-subcontractor or material or equipment supplier shall own or claim a copyright in the drawings, specifications and other documents prepared by the Architect or the Architect's consultants, and unless otherwise indicated the Architect and the Architect's consultants shall be deemed the authors and owners of their respective Instruments of Service, including the Drawings and Specifications, them, and will retain all common law, statutory and other reserved rights, including copyrights. The Contractor, in addition to the copyrights. All copies of Instruments of Service, except the Contractor's record set, shall be returned or suitably accounted for to the Architect, on request, upon completion of the Work. The drawings, specifications and other documents prepared by the Architect and the Architect's consultants, and copies thereof furnished to the Contractor, are for use solely with respect to this Project. As such, the City is hereby declared sole-owner of these documents in regards to this Project and will abide by the limitations described in Subparagraph 1.5.1. They are not to be used by the Contractor or any Subcontractor, Sub-subcontractor or material or equipment supplier on other projects or for additions to this Project outside the scope of the Work without the specific written consent of the Owner, Architect and the Architect's consultants. The Contractor, Subcontractors, Sub-subcontractors, and material or equipment suppliers shall not own or claim a copyright in the Instruments of Service. are authorized to use and reproduce applicable portions of the drawings, specifications and other documents prepared by the Architect and the Architect's consultants appropriate to and for use in the execution of their Work under the Contract Documents. All copies made under this authorization shall bear the statutory copyright notice, if any, shown on the drawings, specifications and other documents prepared by

the Architect and the Architect's consultants. Submittal or distribution to meet official regulatory requirements or for other purposes in connection with this Project is not to be construed as publication in derogation of the Architect's or Architect's consultants' reserved rights.

~~§ 1.5.2 The Contractor, Subcontractors, Sub-subcontractors and material or equipment suppliers are authorized to use and reproduce the Instruments of Service provided to them solely and exclusively for execution of the Work. All copies made under this authorization shall bear the copyright notice, if any, shown on the Instruments of Service. The Contractor, Subcontractors, Sub-subcontractors, and material or equipment suppliers may not use the Instruments of Service on other projects or for additions to this Project outside the scope of the Work without the specific written consent of the Owner, Architect and the Architect's consultants.~~

§ 1.5.2. Intentionally Omitted.

§ 1.6 TRANSMISSION OF DATA IN DIGITAL FORM

If the parties intend to transmit Instruments of Service or any other information or documentation in digital form, they shall endeavor to establish necessary protocols governing such transmissions, unless otherwise already provided in the Agreement or the Contract Documents.

ARTICLE 2 OWNER

§ 2.1 GENERAL

§ 2.1.1 The Owner is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Owner shall designate in writing a representative who shall have express authority to bind the Owner with respect to all matters requiring the Owner's approval or authorization. Except as otherwise provided in Section 4.2.1, the Architect does not have such authority. The term "Owner" means the Owner or the Owner's authorized representative.

§ 2.1.2 The Owner shall furnish to the Contractor within fifteen days after receipt of a written request, information necessary and relevant for the Contractor to evaluate, give notice of or enforce mechanic's lien rights. Such information shall include a correct statement of the record legal title to the property on which the Project is located, usually referred to as the site, and the Owner's interest therein.

§ 2.2 INFORMATION AND SERVICES REQUIRED OF THE OWNER

~~§ 2.2.1 Prior to commencement of the Work, the Contractor may request in writing that the Owner provide reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract. Thereafter, the Contractor may only request such evidence if (1) the Owner fails to make payments to the Contractor as the Contract Documents require; (2) a change in the Work materially changes the Contract Sum; or (3) the Contractor identifies in writing a reasonable concern regarding the Owner's ability to make payment when due. The Owner shall furnish such evidence as a condition precedent to commencement or continuation of the Work or the portion of the Work affected by a material change. After the Owner furnishes the evidence, the Owner shall not materially vary such financial arrangements without prior notice to the Contractor.~~

§ 2.2.1. Intentionally Omitted.

§ 2.2.2 Except for permits and fees that are the responsibility of the Contractor under the Contract Documents, including those required under Section 3.7.1, the Owner shall secure and pay for necessary approvals, easements, assessments and charges required for construction, use or occupancy of permanent structures or for permanent changes in existing facilities. Unless otherwise specified, the following applies:

a. Water line taps, construction of pits for water taps and meter, and restoration of the area to its original condition shall be performed by the Contractor at its expense. Only new water meters shall be installed by City forces at the expense of project sponsor (i.e. the City or private developer). All the aforementioned shall be coordinated by the Contractor.

b. Sanitary taps and cleanouts shall be done by the Contractor or its Subcontractor at the Contractor's expense. HRSD tap fees will be paid by the Owner.

c. For gas and electrical work and associated meter installations, the Contractor shall be responsible for complete coordination of work with utilities, including provision of all necessary labor, equipment, and materials as required in the Contract Documents as well as payment of all resulting costs to aforesaid Work.

d. For telephone and cables, the Contractor shall be responsible for coordination of telephone trunk lines and cable installation with telephone/television company to the "point of penetration" to the facility, including provision of all necessary labor, equipment, and materials as required in the Contract Documents as well as payment of resulting costs to all aforesaid work.

§ 2.2.3 The Owner shall furnish surveys describing physical characteristics, legal limitations and utility locations for the site of the Project, and a legal description of the site. The Contractor shall be entitled to rely on the accuracy of information furnished by the Owner-Owner, subject to Subparagraph 3.74, but shall exercise proper precautions relating to the safe performance of the Work.

§ 2.2.3.1 The Contractor shall be responsible for protecting pins, stakes, marks, hubs, and control points. Replacement of damaged or destroyed pins, stakes, marks, hubs or control points shall be conducted under the supervision of a surveyor licensed in the Commonwealth of Virginia, if required by the City, and at the Contractor's expense. The Contractor shall coordinate with the Survey Division of the Department of Public Works (664-4645) prior to resetting of points and shall provide certified documentation to include the reference/recovery sheet with swing ties for new benchmarks.

§ 2.2.4 The Owner shall furnish information or services required of the Owner by the Contract Documents with reasonable promptness. The Owner shall also furnish any other information or services under the Owner's control and relevant to the Contractor's performance of the Work with reasonable promptness after receiving the Contractor's written request for such information or services.

§ 2.2.5 Unless otherwise provided in the Contract Documents, the Owner shall furnish to the Contractor one copy of the Contract Documents for purposes of making reproductions pursuant to Section 1.5.2.(1) CD containing the drawings, specifications, and addendums, in PDF format, free of charge.

§ 2.3 OWNER'S RIGHT TO STOP THE WORK

If the Contractor fails to correct Work that is not in accordance with the requirements of the Contract Documents as required by Section 12.2 or repeatedly fails to carry out Work in accordance with the Contract Documents, the Owner may issue a written order to the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, the right of the Owner to stop the Work shall not give rise to a duty on the part of the Owner to exercise this right for the benefit of the Contractor or any other person or entity, except to the extent required by Section 6.1.3.

§ 2.4 OWNER'S RIGHT TO CARRY OUT THE WORK

If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a ten-day period after receipt of written notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness, the Owner may, without prejudice to other remedies the Owner may have, correct such deficiencies. In such case an appropriate Change Order shall be issued deducting from payments then or thereafter due the Contractor the reasonable cost of correcting such deficiencies, including Owner's expenses and compensation for the Architect's additional services made necessary by such default, neglect or failure. Such action by the Owner and amounts charged to the Contractor are both subject to prior approval of the Architect. If payments then or thereafter due the Contractor are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner.

ARTICLE 3 CONTRACTOR

§ 3.1 GENERAL

§ 3.1.1 The Contractor is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Contractor shall be lawfully licensed, if required in the jurisdiction where the Project is located. The Contractor shall designate in writing a representative who shall have express authority to bind the Contractor with respect to all matters under this Contract. The term "Contractor" means the Contractor or the Contractor's authorized representative.

§ 3.1.2 The Contractor shall perform the Work in accordance with the Contract Documents.

§ 3.1.3 The Contractor shall not be relieved of obligations to perform the Work in accordance with the Contract Documents either by activities or duties of the Architect in the Architect's administration of the Contract, or by tests, inspections or approvals required or performed by persons or entities other than the Contractor.

§ 3.2 REVIEW OF CONTRACT DOCUMENTS AND FIELD CONDITIONS BY CONTRACTOR

§ 3.2.1 Execution of the Contract by the Contractor is a representation that the Contractor has visited the site, become generally familiar with local conditions under which the Work is to be performed and correlated personal observations with requirements of the Contract Documents.

§ 3.2.2 Because the Contract Documents are complementary, the Contractor shall, before starting each portion of the Work, carefully study and compare the various Contract Documents relative to that portion of the Work, as well as the information furnished by the Owner pursuant to Section 2.2.3, shall take field measurements of any existing conditions related to that portion of the Work, and shall observe any conditions at the site affecting it. These obligations are for the purpose of facilitating coordination and construction by the Contractor and are not for the purpose of discovering errors, omissions, or inconsistencies in the Contract Documents; however, the Contractor shall promptly report to the Architect any errors, inconsistencies or omissions discovered by or made known to the Contractor as a request for information in such form as the Architect may require. It is recognized that the Contractor's review is made in the Contractor's capacity as a contractor and not as a licensed design professional, unless otherwise specifically provided in the Contract Documents. Any failure by the Contractor to acquaint himself with such information shall not relieve him from the responsibility for successfully performing the Work.

.1 Dimensions of Work shall not be determined by scale or rule, but figured dimensions shall be used at all times.

.2 The Contractor shall verify all dimensions by measurement at the jobsite, and shall take any and all other measurements necessary to verify the drawings and to properly layout the Work.

.3 The study of the Contract Documents by the Contractor shall be made sufficiently in advance of the actual layout of the work so as to allow the Contract Documents to be interpreted or modified by the Architect.

§ 3.2.3 The Contractor is not required to ascertain that the Contract Documents are in accordance with applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, but the Contractor shall promptly report to the Architect any nonconformity discovered by or made known to the Contractor as a request for information in such form as the Architect may require.

§ 3.2.4 If the Contractor believes that additional cost or time is involved because of clarifications or instructions issued by the Architect in response to the Contractor's notices or requests for information pursuant to Sections 3.2.2 or 3.2.3, the Contractor shall make Claims as provided in Article 15. If the Contractor fails to perform the obligations of Sections 3.2.2 or 3.2.3, the Contractor shall pay such costs and damages to the Owner as would have been avoided if the Contractor had performed such obligations. If the Contractor performs those obligations, the Contractor shall not be liable to the Owner or Architect for damages resulting from errors, inconsistencies or omissions in the Contract Documents, or for differences between field measurements or conditions and the Contract Documents, or for nonconformities of the Contract Documents to applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities. Documents unless the Contractor recognized such error, inconsistency, omission or difference and knowingly failed to report it to the Architect.

§ 3.3 SUPERVISION AND CONSTRUCTION PROCEDURES

§ 3.3.1 The Contractor shall supervise and direct the Work, using the Contractor's best skill and attention. The Contractor shall be solely responsible for, and have control over, construction means, methods, techniques, sequences and procedures and for coordinating all portions of the Work under the Contract, unless the Contract Documents give other specific instructions concerning these matters. If the Contract Documents give specific instructions concerning construction means, methods, techniques, sequences or procedures, the Contractor shall evaluate the jobsite safety thereof and, except as stated below, shall be fully and solely responsible for the jobsite safety of such means, methods, techniques, sequences or procedures. If the Contractor determines that such means,

methods, techniques, sequences or procedures may not be safe, the Contractor shall give timely written notice to the Owner and Architect and shall not proceed with that portion of the Work without further written instructions from the Architect. If the Contractor is then instructed to proceed with the required means, methods, techniques, sequences or procedures without acceptance of changes proposed by the Contractor, the Owner shall be solely responsible for any loss or damage arising solely from those Owner-required means, methods, techniques, sequences or procedures.

§ 3.3.2 The Contractor shall be responsible to the Owner for acts and omissions of the Contractor's employees, Subcontractors and their agents and employees, and other persons or entities performing portions of the Work for, or on behalf of, the Contractor or any of its Subcontractors.

§ 3.3.3 The Contractor shall be responsible for inspection of portions of Work already performed to determine that such portions are in proper condition to receive subsequent Work.

§ 3.4 LABOR AND MATERIALS

§ 3.4.1 Unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, and other facilities and services necessary for proper execution and completion of the Work, whether temporary or permanent and whether or not incorporated or to be incorporated in the Work.

§ 3.4.2 Except in the case of minor changes in the Work authorized by the Architect in accordance with Sections 3.12.8 or 7.4, the Contractor may make substitutions only with the consent of the Owner, after evaluation by the Architect and in accordance with a Change Order or Construction Change Directive.

a. Substituted Materials. Request for approval of any substituted material and equipment for those specified or shown on the drawings shall be made in writing to the Engineer within 30 days after award of the Contract. If this request is not submitted, the Engineer reserves the right to have the Contractor furnish the material and equipment definitely specified or shown on the plans. The Contractor shall show, in writing, the monetary savings, improvement in quality, time savings, and other factors to be gained from the proposed substitute. Approval of substitute materials and equipment will be at the sole discretion of the Engineer.

b. Or Equal. It is not the intent of these specifications to exclude or omit products or any responsible manufacturer, if said products are equal in every respect to those mentioned herein. Whenever an article, or any class of materials is specified by trade name or byname of any particular patentee, manufacturer or dealer, it shall be taken as intending to mean equal thereto in quality, finish, size, durability and equally as serviceable for the purpose for which it is or they intended. Request for approval of any "equal" material or product for those specified or shown on the drawings shall be made in writing to the Engineer within 30 days after award of the Contract. If this request is not submitted, the Engineer reserves the right to have the Contractor furnish the material and products definitely specified and shown on the plans. The Contractor shall show, in writing, that the material or product being proposed is equal in every respect to that specified and shall provide all necessary supporting documentation requested by the Engineer. The quality shall be determined by the Engineer, and he alone shall be sole judge as to what materials or services will be accepted as equal. No substitution of materials, methods or services specified shall be made without written approval from the Engineer.

c. Materials and Equipment Manufacturer's Recommendation. All materials, equipment or other items specified by trade or manufacturer's name shall be handled, installed, erected or connected in strict conformity with the manufacturer's recommendations and/or specifications. By making requests for substitutions, the Contractor:

1. Represents that the Contractor has personally investigated the proposed substitute product and determined that it is equal or superior in all respects to that specified;

2. Represents that the Contractor will provide the same warranty for the substitution that the Contractor would for that specified;

3. Certifies that the cost data presented is complete and includes all related costs under this Contract except the Architect's redesign costs, and waives all claims for additional costs and time extensions related to the substitution which may subsequently become apparent; and

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4. Will coordinate the installation of the accepted substitute, making such changes as may be required for the Work to be complete in all respects.

§ 3.4.3 The Contractor shall enforce strict discipline and good order among the Contractor's employees and other persons carrying out the Work. The Contractor shall not permit employment of unfit persons or persons not properly skilled in tasks assigned to them.

§ 3.5 WARRANTY

The Contractor warrants to the Owner and Architect that materials and equipment furnished under the Contract will be of good quality and new unless the Contract Documents require or permit otherwise. The Contractor further warrants that the Work will conform to the requirements of the Contract Documents and will be free from defects, except for those inherent in the quality of the Work the Contract Documents require or permit. Work, materials, or equipment not conforming to these requirements may be considered defective. The Contractor's warranty excludes remedy for damage or defect caused by abuse, alterations to the Work not executed by the Contractor, improper or insufficient maintenance, improper operation, or normal wear and tear and normal usage. If required by the Architect, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment.

§ 3.6 TAXES

The Contractor shall pay sales, consumer, use and similar taxes for the Work provided by the Contractor that are legally enacted when bids are received or negotiations concluded, whether or not yet effective or merely scheduled to go into effect.

§ 3.7 PERMITS, FEES, NOTICES AND COMPLIANCE WITH LAWS

§ 3.7.1 Unless otherwise provided in the Contract Documents, the Contractor shall secure and pay for the building permit as well as for other permits, fees, licenses, and inspections by government agencies necessary for proper execution and completion of the Work that are customarily secured after execution of the Contract and legally required at the time bids are received or negotiations concluded. The Contractor shall be advised that there is NO permit fee for new construction, additions, etc. for CITY-OWNED BUILDINGS. Before final payment is made on the Project, Contractor shall demonstrate that the necessary inspections, certificates of occupancy, clearance, and/or acceptance from the City, State, Federal, and/or private entities/organizations such as from the City's Building Official, Corps of Engineers, Department of Environmental Quality, etc. have been obtained.

§ 3.7.2 The Contractor shall comply with and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities applicable to performance of the Work.

§ 3.7.3 If the Contractor performs Work knowing it to be contrary to applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, the Contractor shall assume appropriate responsibility for such Work and shall bear the costs attributable to correction.

§ 3.7.4 Concealed or Unknown Conditions. If the Contractor encounters conditions at the site that are (1) subsurface or otherwise concealed physical conditions that differ materially from those indicated in the Contract Documents or (2) unknown physical conditions of an unusual nature, that differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, the Contractor shall promptly provide notice to the Owner and the Architect before conditions are disturbed ~~and in no event later than 21 days after first observance of the conditions, disturbed, Contractor shall not disturb such condition or perform any Work in connection therewith (except as aforesaid) until receipt of written order to do so "except in an emergency as required by Paragraph 10.4..~~ The Architect will promptly investigate such conditions and, if the Architect determines that they differ materially and cause an increase or decrease in the Contractor's cost of, or time required for, performance of any part of the Work, will recommend an equitable adjustment in the Contract Sum or Contract Time, or both. If the Architect determines that the conditions at the site are not materially different from those indicated in the Contract Documents and that no change in the terms of the Contract is justified, the Architect shall promptly notify the Owner and Contractor in writing, stating the reasons. With respect to unforeseen Work that is paid on a Unit Price Basis, any adjustment in quantity and Contract price will be determined by the Architect/Engineer subject to the provisions of Subparagraph 15.1.5.3. Architect/Engineer will review with the Contractor the Architect/Engineer's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or

otherwise). If either party disputes the Architect's determination or recommendation, that party may proceed as provided in Article 15.

§ 3.7.4.1 Possible Price and Times Adjustments. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Terms if:

a. Contractor knew of the existence of such conditions at the time Contractor made a final commitment to Owner in respect to Contract price and Contract times by the submission of a Bid or becoming bound under a negotiated contract; or

b. The existence of such condition could reasonably have been discovered or revealed as a result of examination, investigation, exploration, test, or study of the Site and contiguous areas required by the bidding requirements or Contract Documents to be conducted by or for Contractor prior to Contractor's making such final commitment; or

c. Contractor failed to give written notice within the time and as required by Subparagraph 3.7.4.

§ 3.7.4.2 Subsurface and Physical Conditions. The Contract Documents identify:

a. Those reports of explorations and tests of subsurface conditions at or contiguous to the Site that the Architect/Engineer has used in preparing the Contract Documents,

b. Those drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Site that the Architect/Engineer has used in preparing the Contract Documents.

§ 3.7.4.3 Limited Reliance by Contractor on Technical Data Authorized. Contractor may rely upon the accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such "technical data", if any, shall be identified in Supplementary General Conditions. Contractor may not rely upon or make any claim against Owner, Architect/Engineer, or any of the Architect/Engineer's consultants with respect to:

a. The completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by the Contractor, and safety precautions and programs incident thereto; or

b. Any Contractor interpretation of or conclusion drawing from any "technical data" or any such data, interpretations, opinions, or information.

§ 3.7.5 If, in the course of the Work, the Contractor encounters human remains or recognizes the existence of burial markers, archaeological sites or wetlands not indicated in the Contract Documents, the Contractor shall immediately suspend any operations that would affect them and shall notify the Owner and Architect. Upon receipt of such notice, the Owner shall promptly take any action necessary to obtain governmental authorization required to resume the operations. The Contractor shall continue to suspend such operations until otherwise instructed by the Owner but shall continue with all other operations that do not affect those remains or features. Requests for adjustments in the Contract Sum and Contract Time arising from the existence of such remains or features may be made as provided in Article 15.

§ 3.8 ALLOWANCES

§ 3.8.1 The Contractor shall include in the Contract Sum all allowances stated in the Contract Documents. Items covered by allowances shall be supplied for such amounts and by such persons or entities as the Owner may direct, but the Contractor shall not be required to employ persons or entities to whom the Contractor has reasonable objection.

§ 3.8.2 Unless otherwise provided in the Contract Documents,

- .1 Allowances shall cover the cost to the Contractor of materials and equipment delivered at the site and all required taxes, less applicable trade discounts;

- .2 Contractor's costs for unloading and handling at the site, labor, installation costs, overhead, profit and other expenses contemplated for stated allowance amounts shall be included in the Contract Sum but not in the allowances; and
- .3 Whenever costs are more than or less than allowances, the Contract Sum shall be adjusted accordingly by Change Order. The amount of the Change Order shall reflect (1) the difference between actual costs and the allowances under Section 3.8.2.1 and (2) changes in Contractor's costs under Section 3.8.2.2. The Contractor shall attach with monthly invoices the original copy of sales invoices/receipts for materials or equipment that are covered under allowances.

§ 3.8.3 Materials and equipment under an allowance shall be selected by the Owner ~~with reasonable promptness in sufficient time to avoid delay in the Work.~~

§ 3.9 SUPERINTENDENT

§ 3.9.1 The Contractor shall employ a competent superintendent and necessary assistants who shall be in attendance at the Project site during performance of the Work. The superintendent shall represent the Contractor, and communications given to the superintendent shall be as binding as if given to the Contractor. Important communications shall be confirmed in writing. Other communications shall be similarly confirmed on written request in each case.

1. The superintendent shall not be changed except with the consent of the Owner, unless the superintendent ceases to be in the Contractor's employ.

§ 3.9.2 The Contractor, as soon as practicable after award of the Contract, and prior to mobilization or proceeding with any work on site, shall furnish in writing to the Owner through the Architect the name and qualifications of a proposed superintendent. The Architect may reply within 14 days to the Contractor in writing stating (1) whether the Owner or the Architect has reasonable objection to the proposed superintendent or (2) that the Architect requires additional time to review. Failure of the Architect to reply within the 14 day period shall constitute notice of no reasonable objection.

§ 3.9.3 The Contractor shall not employ a proposed superintendent to whom the Owner or Architect has made reasonable and timely objection. The Contractor shall not change the superintendent without the Owner's consent, which shall not unreasonably be withheld or delayed.

§ 3.9.4 A qualified General Superintendent shall be present on the project site whenever work is being performed, unless otherwise authorized in writing by the Owner. The Contractor shall notify the Owner whenever the superintendent will be absent for four hours or more. This notification shall include the name of the designated substitute. Any substitute shall be familiar with the project and have the same authority of the primary superintendent. Verbal notification is acceptable for periods less than one full workday.

1. The qualified General Superintendent shall remain on site each day throughout all work days whenever contract work is performed through the punch list period and until all punch list items are complete. Lack of supervision shall constitute a reduction in the Contract Amount of General Conditions, Supervision, or other category which solely represents at the General Contractor's work responsibility, in the amount of \$250.00 per day, or any portion of a day, based on the amount indicated.

§ 3.9.5 The superintendent shall serve as a day to day point of contact on the Project for the Owner and shall, as a minimum, have the authority to:

a. Act on behalf of the Contractor;

b. Direct the work of Subcontractors;

c. Respond to directed changes in the schedule;

d. Provide detailed updates to and respond to inquiries from the Owner on the progress of the work;

e. Act upon verbal and written notification of non-conforming work;

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f. Respond to any complaints regarding the conduct or actions of any employee of the Contractor or any Subcontractor.

§ 3.10 CONTRACTOR'S CONSTRUCTION SCHEDULES

§ 3.10.1 The Contractor, promptly after being awarded the Contract, shall prepare and submit for the Owner's and Architect's information a Contractor's construction schedule for the Work. At the Pre-Construction Conference, the Contractor shall submit to the Engineer for its timely review a preliminary construction schedule indicating the times (number of days or dates) for starting and completing the various stages of the Work. The schedule shall not exceed time limits current under the Contract Documents, shall be revised at appropriate intervals as required by the conditions of the Work and Project, shall be related to the entire Project to the extent required by the Contract Documents, and shall provide for expeditious and practicable execution of the Work.

1. The progress schedule shall be in the form of a bar graph and shall identify each major or critical activity. The progress schedule shall be updated monthly. Five (5) copies of the updated progress schedule shall be submitted with each Application for Payment.

§ 3.10.2 The Contractor shall prepare a submittal schedule, promptly after being awarded the Contract and thereafter as necessary to maintain a current submittal schedule, and shall submit the schedule(s) for the Architect's approval. The Architect's approval shall not unreasonably be delayed or withheld. The submittal schedule shall (1) be coordinated with the Contractor's construction schedule, and (2) allow the Architect reasonable time to review submittals. If the Contractor fails to submit a submittal schedule, the Contractor shall not be entitled to any increase in Contract Sum or extension of Contract Time based on the time required for review of submittals.

§ 3.10.3 The Contractor shall perform the Work in general accordance with the most recent schedules submitted to the Owner and Architect.

§ 3.11 DOCUMENTS AND SAMPLES AT THE SITE

The Contractor shall maintain at the site for the Owner one copy of the Drawings, Specifications, Addenda, Change Orders and other Modifications, in good order and marked currently to indicate field changes and selections made during construction, and one copy of approved Shop Drawings, Product Data, Samples and similar required submittals. These shall be available to the Architect and shall be delivered to the Architect for submittal to the Owner upon completion of the Work as a record of the Work as constructed.

§ 3.12 SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

§ 3.12.1 Shop Drawings are drawings, diagrams, schedules and other data specially prepared for the Work by the Contractor or a Subcontractor, Sub-subcontractor, manufacturer, supplier or distributor to illustrate some portion of the Work.

1. Reproduction of the Contract Drawings, or any portion thereof, shall not be acceptable.

§ 3.12.2 Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams and other information furnished by the Contractor to illustrate materials or equipment for some portion of the Work.

§ 3.12.3 Samples are physical examples that illustrate materials, equipment or workmanship and establish standards by which the Work will be judged.

§ 3.12.4 Shop Drawings, Product Data, Samples and similar submittals are not Contract Documents. Their purpose is to demonstrate the way by which the Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents for those portions of the Work for which the Contract Documents require submittals. Review by the Architect is subject to the limitations of Section 4.2.7. Informational submittals upon which the Architect is not expected to take responsive action may be so identified in the Contract Documents. Submittals that are not required by the Contract Documents may be returned by the Architect without action.

§ 3.12.5 The Contractor shall review for compliance with the Contract Documents, approve and submit to the Architect Shop Drawings, Product Data, Samples and similar submittals required by the Contract Documents in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal

schedule, with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of the Owner or of separate contractors.

The Contractor, within 15 days from the Notice to Proceed, shall submit to the Engineer for approval, a complete schedule of submittals for shop drawings and technical and/or engineering data sheets covering all items and equipment for this Contract as listed in each respective division. Submit for approval six (6) copies of certified Shop Drawings and technical data sheets plus sufficient copies for Contractor's use. Approval of the above submissions shall not relieve the Contractor from complying with the drawings and specifications, nor shall such approval be construed as a guarantee of the accuracy of dimensions or other covered items. The Engineer shall endeavor to process all drawings, data sheets, etc., within 21 calendar days of receipt unless impractical. Except for construction schedule and schedule of values that need to be turned over directly to the City for review/approval, the Contractor shall forward all other submittals for review/approval to only one clearing house. The City will notify the Contractor during the Pre-Construction Conference where to send these submittals.

1. Unless otherwise directed or specified, samples shall be submitted in duplicate. Samples shall be properly labeled, bearing the name and quality of material, name of the manufacturer, name of Project, name of the Contractor and the date of submission.

§ 3.12.6 By submitting Shop Drawings, Product Data, Samples and similar submittals, the Contractor represents to the Owner and Architect that the Contractor has (1) reviewed and approved them, (2) determined and verified materials, field measurements and field construction criteria related thereto, ~~or will do so and~~ (3) checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents. All copies of Shop Drawings submitted for approval shall bear the following statement: "Checked and certified correct for conformance with Contract Documents." This statement shall be dated and signed by the Contractor and shall appear on each submittal. One copy of each approved submittal shall be kept at job site at all times.

§ 3.12.7 The Contractor shall perform no portion of the Work for which the Contract Documents require submittal and review of Shop Drawings, Product Data, Samples or similar submittals until the respective submittal has been approved by the Architect.

1. The Contractor shall furnish to the field as many prints of the approved Shop Drawings as may be required.

§ 3.12.8 The Work shall be in accordance with approved submittals except that the Contractor shall not be relieved of responsibility for deviations from requirements of the Contract Documents by the Architect's approval of Shop Drawings, Product Data, Samples or similar submittals unless the Contractor has specifically informed the Architect in writing of such deviation at the time of submittal and (1) the Architect has given written approval to the specific deviation as a minor change in the Work, or (2) a Change Order or Construction Change Directive has been issued authorizing the deviation. The Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples or similar submittals by the Architect's approval thereof.

§ 3.12.9 The Contractor shall direct specific attention, in writing or on resubmitted Shop Drawings, Product Data, Samples or similar submittals, to revisions other than those requested by the Architect on previous submittals. In the absence of such written notice, the Architect's approval of a resubmission shall not apply to such revisions.

§ 3.12.10 The Contractor shall not be required to provide professional services that constitute the practice of architecture or engineering unless such services are specifically required by the Contract Documents for a portion of the Work or unless the Contractor needs to provide such services in order to carry out the Contractor's responsibilities for construction means, methods, techniques, sequences and procedures. The Contractor shall not be required to provide professional services in violation of applicable law. If professional design services or certifications by a design professional related to systems, materials or equipment are specifically required of the Contractor by the Contract Documents, the Owner and the Architect will specify all performance and design criteria that such services must satisfy. The Contractor shall cause such services or certifications to be provided by a properly licensed design professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings and other submittals prepared by such professional. Shop Drawings and other submittals related to the Work designed or certified by such professional, if prepared by others, shall bear

such professional's written approval when submitted to the Architect. The Owner and the Architect shall be entitled to rely upon the adequacy, accuracy and completeness of the services, certifications and approvals performed or provided by such design professionals, provided the Owner and Architect have specified to the Contractor all performance and design criteria that such services must satisfy. Pursuant to this Section 3.12.10, the Architect will review, approve or take other appropriate action on submittals only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Contractor shall not be responsible for the adequacy of the performance and design criteria specified in the Contract Documents.

§ 3.13 USE OF SITE

The Contractor shall confine operations at the site to areas permitted by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities and the Contract Documents and shall not unreasonably encumber the site with materials or equipment.

§ 3.14 CUTTING AND PATCHING

§ 3.14.1 The Contractor shall be responsible for cutting, fitting or patching required to complete the Work or to make its parts fit together properly. All areas requiring cutting, fitting and patching shall be restored to the condition existing prior to the cutting, fitting and patching, unless otherwise required by the Contract Documents.

§ 3.14.2 The Contractor shall not damage or endanger a portion of the Work or fully or partially completed construction of the Owner or separate contractors by cutting, patching or otherwise altering such construction, or by excavation. The Contractor shall not cut or otherwise alter such construction by the Owner or a separate contractor except with written consent of the Owner and of such separate contractor; such consent shall not be unreasonably withheld. The Contractor shall not unreasonably withhold from the Owner or a separate contractor the Contractor's consent to cutting or otherwise altering the Work.

§ 3.14.3 UNDERGROUND UTILITY DAMAGE PREVENTION ACT

The Contractor shall be required and agrees to comply with all the provisions of the Virginia Underground Utility Damage Prevention Act (Section 56-265.14, et seq. Code of Virginia, 1950, as amended) and hereby agrees to hold the City of Norfolk harmless against any loss, damages or claims of any nature whatsoever arising out of the Contractor's failure to comply with the requirements of said Act.

§ 3.15 CLEANING UP

§ 3.15.1 The Contractor shall keep the premises and surrounding area free from accumulation of waste materials or rubbish caused by operations under the Contract. At completion of the Work, the Contractor shall remove waste materials, rubbish, the Contractor's tools, construction equipment, machinery and surplus materials from and about the Project. In addition, immediately after the completion of the Work, or any portion thereof, the Contractor shall restore the facility, street, and surrounding area to a condition as clean as before the Work was begun. The drainage system shall also be inspected and cleaned by the Contractor. If done by the City or its agents, any expense the City may incur will be charged against the Contractor and deducted before Final Payment is made. The Contractor will be required to back fill along the edges of the sidewalks, driveways and curbs where settlement has occurred, and reshape and reslope where directed. Site must be maintained regularly according to State and City regulations, including regular grass cutting. During the progress of the Work, the sidewalks and portions of the streets adjoining the Work, or in its vicinity, must not be obstructed or littered, and the adjacent sidewalks and gutters must be kept clean as directed by the Engineer.

§ 3.15.2 If the Contractor fails to clean up as provided in the Contract Documents, the Owner may do so and ~~Owner shall be entitled to reimbursement from the costs thereof shall be charged to the Contractor.~~

§ 3.16 ACCESS TO WORK

The Contractor shall provide the Owner and Architect access to the Work in preparation and progress wherever located.

§ 3.17 ROYALTIES, PATENTS AND COPYRIGHTS

The Contractor shall pay all royalties and license fees. The Contractor shall defend suits or claims for infringement of copyrights and patent rights and shall hold the Owner and Architect harmless from loss on account thereof, but

shall not be responsible for such defense or loss when a particular design, process or product of a particular manufacturer or manufacturers is required by the Contract Documents, or where the copyright violations are contained in Drawings, Specifications or other documents prepared by the Owner or Architect. However, if the Contractor has reason to believe that the required design, process or product is an infringement of a copyright or a patent, the Contractor shall be responsible for such loss unless such information is promptly furnished to the Architect.

§ 3.18 INDEMNIFICATION

§ 3.18.1 To the fullest extent permitted by law the Contractor shall indemnify and hold harmless the Owner, Architect, Architect's consultants, and agents and employees of any of them from and against claims, damages, losses and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work, provided that such claim, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), but only to the extent caused by the negligent acts or omissions of the Contractor, a Subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss or expense is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity ~~that which~~ would otherwise exist as to a party or person described in this Section 3.18.

§ 3.18.1.1 The requirements of this Paragraph 3.18 shall be incorporated into the Contractor's insurance policies in a manner approved by the Owner.

§ 3.18.2 In claims against any person or entity indemnified under this Section 3.18 by an employee of the Contractor, a Subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, the indemnification obligation under Section 3.18.1 shall not be limited by a limitation on amount or type of damages, compensation or benefits payable by or for the Contractor or a Subcontractor under workers' compensation acts, disability benefit acts or other employee benefit acts.

ARTICLE 4 ARCHITECT

§ 4.1 GENERAL

§ 4.1.1 ~~The Owner shall retain an architect-architect is the person~~ lawfully licensed to practice architecture or an entity lawfully practicing architecture ~~in the jurisdiction where the Project is located. That person or entity is identified as the Architect-identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number.~~ The term "Architect" means the Architect or the Architect's authorized representative.

§ 4.1.2 Duties, responsibilities and limitations of authority of the Architect as set forth in the Contract Documents shall not be restricted, modified or extended without written consent of the Owner, Contractor and Architect. Consent shall not be unreasonably withheld.

~~§ 4.1.3 If the employment of the Architect is terminated, the Owner shall employ a successor architect as to whom the Contractor has no reasonable objection and whose status under the Contract Documents shall be that of the Architect.~~

§ 4.1.3. Intentionally Omitted.

§ 4.2 ADMINISTRATION OF THE CONTRACT

§ 4.2.1 As the Owner's Project representative, ~~the Consulting Architect/Engineer's duties, responsibilities and limitations of authority shall be presented during the Pre-Construction Conference.~~ The Architect will provide administration of the Contract as described in the Contract Documents and will be an Owner's representative during construction until the date the Architect issues the final Certificate for Payment. The Architect will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents.

§ 4.2.1.1 Engineer – An individual or entity having an Agreement with the Owner to furnish services as Owner's independent professional consultant with respect to the Project and who is identified as such in the Agreement.

§ 4.2.2 ~~The Architect-Architect, as a representative of the Owner, will visit the site at intervals appropriate to the stage of construction, or as otherwise agreed with the Owner, to become generally familiar with the Contractor's~~

operations (1) to become familiar with and to keep the Owner informed about the progress and quality of the portion of the Work completed, and to determine in general if the Work observed is being performed in a manner indicating that (2) to endeavor to guard the Owner against defects and deficiencies in the Work, when fully completed, will be in accordance with the Contract Documents. However, the Architect will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. The Architect will ~~not~~ neither have control over, charge of, or responsibility nor be responsible for, the construction means, methods, techniques, sequences or procedures, or for the safety precautions and programs in connection with the Work, since these are solely the Contractor's rights and responsibilities under the Contract Documents, except as provided in Section 3.3.1.

§ 4.2.3 On the basis of the site visits, the Architect will keep the Owner reasonably informed about the progress and quality of the portion of the Work completed, and report to the Owner (1) known deviations from the Contract Documents and from the most recent construction schedule submitted by the Contractor, and (2) defects and deficiencies observed in the Work. The Architect will not be responsible for the Contractor's failure to perform the Work in accordance with the requirements of the Contract Documents. The Architect will not have control over or charge of and will not be responsible for acts or omissions of the Contractor, Subcontractors, or their agents or employees, or any other persons or entities performing portions of the Work.

§ 4.2.4 COMMUNICATIONS FACILITATING CONTRACT ADMINISTRATION

Except as otherwise provided in the Contract Documents or when direct communications have been specially authorized, the Owner and Contractor shall endeavor to communicate with each other through the Architect about matters arising out of or relating to the Contract. Communications by and with the Architect's consultants shall be through the Architect. Communications by and with Subcontractors and material suppliers shall be through the Contractor. Communications by and with separate contractors shall be through the Owner.

§ 4.2.5 Based on the Architect's evaluations of the Contractor's Applications for Payment, the Architect will review and certify the amounts due the Contractor and will issue Certificates for Payment in such amounts.

§ 4.2.6 The Architect has authority to reject Work that does not conform to the Contract Documents. Whenever the Architect considers it necessary or advisable, the Architect will have authority to require inspection or testing of the Work in accordance with Sections 13.5.2 and 13.5.3, whether or not such Work is fabricated, installed or completed. However, neither this authority of the Architect nor a decision made in good faith either to exercise or not to exercise such authority shall give rise to a duty or responsibility of the Architect to the Contractor, Subcontractors, material and equipment suppliers, their agents or employees, or other persons or entities performing portions of the Work.

§ 4.2.7 The Architect will review and approve, or take other appropriate action upon, the Contractor's submittals such as Shop Drawings, Product Data and Samples, but only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Architect's action will be taken in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness while allowing sufficient time in the Architect's professional judgment to permit adequate review. Review of such submittals is not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the Contractor as required by the Contract Documents. The Architect's review of the Contractor's submittals shall not relieve the Contractor of the obligations under Sections 3.3, 3.5 and 3.12. The Architect's review shall not constitute approval of safety precautions or, unless otherwise specifically stated by the Architect, of any construction means, methods, techniques, sequences or procedures. The Architect's approval of a specific item shall not indicate approval of an assembly of which the item is a component.

§ 4.2.8 The Architect will prepare Change Orders and Construction Change Directives, and may authorize minor changes in the Work as provided in Section 7.4. The Architect will investigate and make determinations and recommendations regarding concealed and unknown conditions as provided in Section 3.7.4.

§ 4.2.9 The Architect will conduct inspections to determine the date or dates of Substantial Completion and the date of final completion; issue Certificates of Substantial Completion pursuant to Section 9.8; receive and forward to the Owner, for the Owner's review and records, written warranties and related documents required by the Contract and

assembled by the Contractor pursuant to Section 9.10; and issue a final Certificate for Payment pursuant to Section 9.10.

§ 4.2.10 If the Owner and Architect agree, the Architect will provide one or more project representatives to assist in carrying out the Architect's responsibilities at the site. The duties, responsibilities and limitations of authority of such project representatives shall be as set forth in an exhibit to be incorporated in the Contract Documents.

§ 4.2.11 The Architect will interpret and decide matters concerning performance under, and requirements of, the Contract Documents on written request of either the Owner or Contractor. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness.

§ 4.2.12 Interpretations and decisions of the Architect will be consistent with the intent of, and reasonably inferable from, the Contract Documents and will be in writing or in the form of drawings. When making such interpretations and decisions, the Architect will endeavor to secure faithful performance by both Owner and Contractor, will not show partiality to either and will not be liable for results of interpretations or decisions rendered in good faith.

§ 4.2.13 The Architect's decisions on matters relating to aesthetic effect will be final if consistent with the intent expressed in the Contract Documents.

§ 4.2.14 The Architect will review and respond to requests for information about the Contract Documents. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness. If appropriate, the Architect will prepare and issue supplemental Drawings and Specifications in response to the requests for information.

§ 4.2.15 PRE-CONSTRUCTION CONFERENCE. Before starting the Work, the Architect/Engineer/Owner will schedule a conference to review the requirements on such matters as Project supervision and on-site inspection, Shop Drawing schedules and submission, progress schedules and reports, payrolls, payments to contractors, contract change orders, insurance, safety, labor provisions and equal opportunity in employment and any other items pertinent to the Project. Present at the conference will be the Architect/Engineer, Owner, Project Representative, the Contractor, and its Superintendent for the project.

ARTICLE 5 SUBCONTRACTORS

§ 5.1 DEFINITIONS

§ 5.1.1 A Subcontractor is a person or entity who has a direct contract with the Contractor to perform a portion of the Work at the site. The term "Subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Subcontractor or an authorized representative of the Subcontractor. The term "Subcontractor" does not include a separate contractor or subcontractors of a separate contractor.

§ 5.1.2 A Sub-subcontractor is a person or entity who has a direct or indirect contract with a Subcontractor to perform a portion of the Work at the site. The term "Sub-subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Sub-subcontractor or an authorized representative of the Sub-subcontractor.

§ 5.2 AWARD OF SUBCONTRACTS AND OTHER CONTRACTS FOR PORTIONS OF THE WORK

§ 5.2.1 Unless otherwise stated in the Contract Documents or the bidding requirements, the Contractor, ~~as soon as practicable within 15 days~~ after award of the Contract, shall furnish in writing to the Owner through the Architect the names of persons or entities (including those who are to furnish materials or equipment fabricated to a special design) proposed for each principal portion of the Work. The Architect may reply within 14 days to the Contractor in writing stating (1) whether the Owner or the Architect has reasonable objection to any such proposed person or entity or (2) that the Architect requires additional time for review. Failure of the Owner or Architect to reply within the 14-day period shall constitute notice of no reasonable objection.

§ 5.2.2 The Contractor shall not contract with a proposed person or entity to whom the Owner or Architect has made reasonable and timely objection. The Contractor shall not be required to contract with anyone to whom the Contractor has made reasonable objection.

§ 5.2.3 If the Owner or Architect has reasonable objection to a person or entity proposed by the Contractor, the Contractor shall propose another to whom the Owner or Architect has no reasonable objection. ~~If the proposed but rejected Subcontractor was reasonably capable of performing the Work, the Contract Sum and Contract Time shall be increased or decreased by the difference, if any, occasioned by such change, and an appropriate Change Order shall be issued before commencement of the substitute Subcontractor's Work. However, no increase in the Contract Sum or Contract Time shall be allowed for such change unless the Contractor has acted promptly and responsively in submitting names as required.~~ objection.

§ 5.2.4 The Contractor shall not substitute a Subcontractor, person or entity previously selected if the Owner or ~~Architect~~ Architect, upon written notice of such intent, makes reasonable objection to such substitution.

§ 5.3 SUBCONTRACTUAL RELATIONS

By appropriate agreement, written where legally required for validity, the Contractor shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to the Contractor by terms of the Contract Documents, and to assume toward the Contractor all the obligations and responsibilities, including the responsibility for safety of the Subcontractor's Work, which the Contractor, by these Documents, assumes toward the Owner and Architect. Each subcontract agreement shall preserve and protect the rights of the Owner and Architect under the Contract Documents with respect to the Work to be performed by the Subcontractor so that subcontracting thereof will not prejudice such rights, and shall allow to the Subcontractor, unless specifically provided otherwise in the subcontract agreement, the benefit of all rights, remedies and redress against the Contractor that the Contractor, by the Contract Documents, has against the Owner. Where appropriate, the Contractor shall require each Subcontractor to enter into similar agreements with Sub-subcontractors. The Contractor shall make available to each proposed Subcontractor, prior to the execution of the subcontract agreement, copies of the Contract Documents to which the Subcontractor will be bound, and, upon written request of the Subcontractor, identify to the Subcontractor terms and conditions of the proposed subcontract agreement that may be at variance with the Contract Documents. Subcontractors will similarly make copies of applicable portions of such documents available to their respective proposed Sub-subcontractors.

§ 5.4 CONTINGENT ASSIGNMENT OF SUBCONTRACTS

§ 5.4.1 Each subcontract agreement for a portion of the Work is assigned by the Contractor to the Owner, provided that

- .1 assignment is effective only after termination of the Contract by the Owner for cause pursuant to Section 14.2 and only for those subcontract agreements that the Owner accepts by notifying the Subcontractor and Contractor in writing; and
- .2 assignment is subject to the prior rights of the surety, if any, obligated under bond relating to the Contract.

~~When the Owner accepts the assignment of a subcontract agreement, the Owner assumes the Contractor's rights and obligations under the subcontract.~~

§ 5.4.2 Upon such assignment, if the Work has been suspended for more than 30 days, the Subcontractor's compensation shall be equitably adjusted for increases in cost resulting from the suspension.

~~§ 5.4.3 Upon such assignment to the Owner under this Section 5.4, the Owner may further assign the subcontract to a successor contractor or other entity. If the Owner assigns the subcontract to a successor contractor or other entity, the Owner shall nevertheless remain legally responsible for all of the successor contractor's obligations under the subcontract.~~

§ 5.4.3. Intentionally Omitted.

§ 5.5 SUBCONTRACTORS COORDINATION OF WORK

Every subcontractor performing work that affects others shall provide for all requirements of the other trades, notwithstanding the Contractor's responsibility to coordinate the Work. Should the work provided by unsuitable for the application of work by any other subcontractor, the subcontractor shall notify the Contractor and the Engineer in writing immediately. The Contractor is required to forward a copy of correspondence from his subcontractors providing notice of unsuitable work.

ARTICLE 6 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

§ 6.1 OWNER'S RIGHT TO PERFORM CONSTRUCTION AND TO AWARD SEPARATE CONTRACTS

§ 6.1.1 The Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces, and to award separate contracts in connection with other portions of the Project or other construction or operations on the site under Conditions of the Contract identical or substantially similar to these including those portions related to insurance and waiver of subrogation. ~~If the Contractor claims that delay or additional cost is involved because of such action by the Owner, the Contractor shall make such Claim as provided in Article 15.~~
subrogation.

§ 6.1.2 When separate contracts are awarded for different portions of the Project or other construction or operations on the site, the term "Contractor" in the Contract Documents in each case shall mean the Contractor who executes each separate Owner-Contractor Agreement.

§ 6.1.3 The Owner shall provide for coordination of the activities of the Owner's own forces and of each separate contractor with the Work of the Contractor, who shall cooperate with them. The Contractor shall participate with other separate contractors and the Owner in reviewing their construction schedules. The Contractor shall make any revisions to the construction schedule deemed necessary after a joint review and mutual agreement. The construction schedules shall then constitute the schedules to be used by the Contractor, separate contractors and the Owner until subsequently revised.

§ 6.1.4 Unless otherwise provided in the Contract Documents, when the Owner performs construction or operations related to the Project with the Owner's own forces, the Owner shall be deemed to be subject to the same obligations and to have the same rights that apply to the Contractor under the Conditions of the Contract, including, without excluding others, those stated in Article 3, this Article 6 and Articles 10, 11 and 12.

§ 6.2 MUTUAL RESPONSIBILITY

§ 6.2.1 The Contractor shall afford the Owner and separate contractors reasonable opportunity for introduction and storage of their materials and equipment and performance of their activities, and shall connect and coordinate the Contractor's construction and operations with theirs as required by the Contract Documents.

§ 6.2.2 If part of the Contractor's Work depends for proper execution or results upon construction or operations by the Owner or a separate contractor, the Contractor shall, prior to proceeding with that portion of the Work, promptly report to the Architect apparent discrepancies or defects in such other construction that would render it unsuitable for such proper execution and results. Failure of the Contractor so to report shall constitute an acknowledgment that the Owner's or separate contractor's completed or partially completed construction is fit and proper to receive the Contractor's Work, except as to defects not then reasonably discoverable.

§ 6.2.3 The Contractor shall reimburse the Owner for costs the Owner incurs that are payable to a separate contractor because of the Contractor's delays, improperly timed activities or defective construction. The Owner shall be responsible to the Contractor for costs the Contractor incurs because of a separate contractor's delays, improperly timed activities, damage to the Work or defective construction.

§ 6.2.4 The Contractor shall promptly remedy damage the Contractor wrongfully causes to completed or partially completed construction or to property of the Owner or separate contractors as provided in Section 10.2.5.

§ 6.2.5 The Owner and each separate contractor shall have the same responsibilities for cutting and patching as are described for the Contractor in Section 3.14.

§ 6.3 OWNER'S RIGHT TO CLEAN UP

If a dispute arises among the Contractor, separate contractors and the Owner as to the responsibility under their respective contracts for maintaining the premises and surrounding area free from waste materials and rubbish, the Owner may clean up and the Architect will allocate the cost among those responsible.

ARTICLE 7 CHANGES IN THE WORK

§ 7.1 GENERAL

§ 7.1.1 Changes in the Work may be accomplished after execution of the Contract, and without invalidating the Contract, by Change Order, Construction Change Directive or order for a minor change in the Work, subject to the limitations stated in this Article 7 and elsewhere in the Contract Documents.

§ 7.1.2 A Change Order shall be based upon agreement among the Owner, Contractor and Architect; a Construction Change Directive requires agreement by the Owner and Architect and may or between the Owner and Contractor; a Construction Change Directive may not be agreed to by the Contractor; an order for a minor change in the Work may be issued by the Architect alone.

§ 7.1.3 Changes in the Work shall be performed under applicable provisions of the Contract Documents, and the Contractor shall proceed promptly, unless otherwise provided in the Change Order, Construction Change Directive or order for a minor change in the Work.

§ 7.1.4 Modifications shall be in compliance with the Code of the City of Norfolk, Virginia, Chapter 33.1.

§ 7.2 CHANGE ORDERS

§ 7.2.1 A Change Order is a written instrument prepared by the Architect and signed by the Owner, Contractor and Architect stating their agreement upon all of the following:

- .1 The change in the Work;
- .2 The amount of the adjustment, if any, in the Contract Sum; and
- .3 The extent of the adjustment, if any, in the Contract Time.

§ 7.3 CONSTRUCTION CHANGE DIRECTIVES

§ 7.3.1 A Construction Change Directive is a written order prepared by the Architect and signed by the Owner and Architect, directing a change in the Work prior to agreement on adjustment, if any, in the Contract Sum or Contract Time, or both. The Owner may by Construction Change Directive, without invalidating the Contract, order changes in the Work within the general scope of the Contract consisting of additions, deletions or other revisions, the Contract Sum and Contract Time being adjusted accordingly.

§ 7.3.2 A Construction Change Directive shall be used in the absence of total agreement on the terms of a Change Order.

§ 7.3.3 If the Construction Change Directive provides for an adjustment to the Contract Sum, the adjustment shall be based on one of the following methods:

- .1 Mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation;
- .2 ~~Unit prices stated in the Contract Documents or subsequently agreed upon;~~ Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement. The estimated quantities of items of Unit Price work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Determinations of the actual quantities and classifications of Unit Price Work performed by Contractor will be made by Architect/Engineer's recommendation to the City as follows;

Architect/Engineer will review with Contractor the Architect/Engineer's preliminary determinations on such matters before rendering a written recommendation thereon (by endorsement of an Application for Payment or otherwise). City's written decision thereon (by approval of Application for Payment or otherwise) will be final and binding (except as modified by Architect/Engineer to reflect changed factual conditions or more accurate data) upon Contractor, subject to the provisions of Paragraph 7.3.4.

Each unit price will be deemed to include an amount considered by Contractor to be adequate to cover Contractor's overhead and profit for each separately identified item.

- .3 Cost to be determined in a manner agreed upon by the parties and a mutually acceptable fixed or percentage fee; or
- .4 As provided in Section 7.3.7.

§ 7.3.4 If unit prices are stated in the Contract Documents or subsequently agreed upon, and if quantities originally contemplated are materially changed in a proposed Change Order or Construction Change Directive so that application of such unit prices to quantities of Work proposed will cause substantial inequity to the Owner or Contractor, the applicable unit prices shall be equitably ~~adjusted~~ adjusted provided that there is no corresponding adjustment with respect to any other item of Work.

§ 7.3.5 Upon receipt of a Construction Change Directive, the Contractor shall promptly proceed with the change in the Work involved and advise the Architect of the Contractor's agreement or disagreement with the method, if any, provided in the Construction Change Directive for determining the proposed adjustment in the Contract Sum or Contract Time.

§ 7.3.6 A Construction Change Directive signed by the Contractor indicates the Contractor's agreement therewith, including adjustment in Contract Sum and Contract Time or the method for determining them. Such agreement shall be effective immediately and shall be recorded as a Change Order.

§ 7.3.7 If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the Architect shall determine the method and the adjustment on the basis of reasonable expenditures and savings of those performing the Work attributable to the change, including, in case of an increase in the Contract Sum, an amount for overhead and profit as set forth in the Agreement, or if no such amount is set forth in the Agreement, a reasonable amount. In such case, and also under Section 7.3.3.3, the Contractor shall keep and present, in such form as the Architect may prescribe, an itemized accounting together with appropriate supporting data. Unless otherwise provided in the Contract Documents, costs for the purposes of this Section 7.3.7 shall be limited to the following:

- .1 Costs of labor, including social security, old age and unemployment insurance, fringe benefits required by agreement or custom, and workers' compensation insurance;
- .2 Costs of materials, supplies and equipment, including cost of transportation, whether incorporated or consumed;
- .3 Rental costs of machinery and equipment, exclusive of hand tools, whether rented from the Contractor or others;
- .4 ~~Costs of premiums for all bonds and insurance, permit fees, and sales, use or similar taxes related to the Work; and~~ Overhead and profit costs, except where such costs have been determined by means of Paragraph 7.3.3.2 above, wherein such costs are included in the unit prices, shall be determined as follows:

Fifteen percent (15%) of the costs determined above shall be paid for overhead and profit of the Contractor or subcontractor(s) actually performing the work, including, but not limited to, field and home office expense, superintendent, taxes, subsistence expenses of any nature, premiums on bonds, insurance, and all other costs and expenses as determined by the City.

In the event the work is performed by a subcontractor or subcontractors, the Contractor shall be paid ten percent (10%) of the total costs determined above, excluding the subcontractor's or subcontractors' overhead and profit, to cover and compensate the Contractor for its overhead and profit;

- .5 ~~Additional costs of supervision and field office personnel directly attributable to the change.~~ Intentionally Omitted.

§ 7.3.8 The amount of credit to be allowed by the Contractor to the Owner for a deletion or change that results in a net decrease in the Contract Sum shall be actual net cost as confirmed by the Architect. ~~Architect plus overhead and profit to actual net cost.~~ When both additions and credits covering related Work or substitutions are involved in a change, the allowance for overhead and profit shall be figured on the basis of net increase, if any, with respect to that change.

§ 7.3.9 Pending final determination of the total cost of a Construction Change Directive to the Owner, the Contractor may not request payment for Work completed under the Construction Change Directive in Applications for Payment. The Architect will make an interim determination for purposes of monthly certification for payment for those costs and certify for payment the amount that the Architect determines, in the Architect's professional judgment, to be reasonably justified. The Architect's interim determination of cost shall adjust the Contract Sum on the same basis as a Change Order, subject to the right of either party to disagree and assert a Claim in accordance with Article 15. Contractor may only include the amounts of fully executed Change Orders in the Applications for Payment.

§ 7.3.10 When the Owner and Contractor agree with a determination made by the Architect concerning the adjustments in the Contract Sum and Contract Time, or otherwise reach agreement upon the adjustments, such agreement shall be effective immediately and the Architect will prepare a Change Order. Change Orders may be issued for all or any part of a Construction Change Directive.

§ 7.4 MINOR CHANGES IN THE WORK

The Architect has authority to order minor changes in the Work not involving adjustment in the Contract Sum or extension of the Contract Time and not inconsistent with the intent of the Contract Documents. Such changes will be effected by written order signed by the Architect and shall be binding on the Owner and Contractor.

ARTICLE 8 TIME

§ 8.1 DEFINITIONS

§ 8.1.1 Unless otherwise provided, Contract Time is the period of time, including authorized adjustments, allotted in the Contract Documents for Substantial Completion of the Work.

§ 8.1.2 The date of commencement of the Work is the date established in the Agreement.

§ 8.1.3 The date of Substantial Completion is the date certified by the Architect in accordance with Section 9.8.

§ 8.1.4 The term "day" as used in the Contract Documents shall mean calendar day unless otherwise specifically defined.

§ 8.2 PROGRESS AND COMPLETION

§ 8.2.1 Time limits stated in the Contract Documents are of the essence of the Contract. By executing the Agreement the Contractor confirms that the Contract Time is a reasonable period for performing the Work.

§ 8.2.2 The Contractor shall not knowingly, except by agreement or instruction of the Owner in writing, prematurely commence operations on the site or elsewhere prior to the effective date of insurance required by Article 11 to be furnished by the Contractor and Owner. The date of commencement of the Work shall not be changed by the effective date of such insurance.

§ 8.2.3 The Contractor shall proceed expeditiously with adequate forces and shall achieve Substantial Completion within the Contract Time.

§ 8.3 DELAYS AND EXTENSIONS OF TIME

§ 8.3.1 If the Contractor is delayed at any time in the commencement or progress of the Work by an act or neglect of the Owner or Architect, or of an employee of either, or of a separate contractor employed by the Owner; or by changes ordered in the Work; or by labor disputes, fire, unusual delay in deliveries, unavoidable casualties or other causes beyond the Contractor's control; or by delay authorized by the ~~Owner pending mediation and arbitration;~~ Owner; or by other causes that the Architect determines may justify delay, then the Contract Time shall be extended by Change Order for such reasonable time as the Architect may determine.

§ 8.3.2 Claims relating to time shall be made in accordance with applicable provisions of Article 15.

§ 8.3.3 This Section 8.3 does not preclude recovery of damages for delay by either party under other provisions of the Contract Documents.

ARTICLE 9 PAYMENTS AND COMPLETION

§ 9.1 CONTRACT SUM

The Contract Sum is stated in the Agreement and, including authorized adjustments, is the total amount payable by the Owner to the Contractor for performance of the Work under the Contract Documents.

§ 9.2 SCHEDULE OF VALUES

Where the Contract is based on a stipulated sum or Guaranteed Maximum Price, the Contractor shall submit to the Architect, before the first Application for Payment, a schedule of values allocating the entire Contract Sum to the various portions of the Work and prepared in such form and supported by such data to substantiate its accuracy as the Architect may require. This schedule, unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's Applications for Payment.

§ 9.3 APPLICATIONS FOR PAYMENT

Based upon Applications for Payment submitted to the Engineer by the Contractor and certificates for payment issued by the Engineer, the City shall make monthly progress payments on account of the Contract Sum to the Contractor as provided in these General Conditions of the Contract for Construction as follows:

The City will endeavor to pay the Contractor, on or about the thirtieth (30th) calendar day after receipt of Request for Payment, ninety-five (95%) percent of the portion of the Contract Sum properly allocated to labor, materials and equipment incorporated in the work and ninety-five (95%) percent of the portion of the Contract Sum properly allocated to materials and equipment suitably stored at the site or at some other location agreed upon in writing by the parties, less the aggregate of previous payments in each case; provided however, the City, at any time after fifty (50%) percent of the work has been completed, if it finds that satisfactory progress is being made, may in its sole discretion make any of the remaining partial payments in full. Also, upon Substantial Completion of the work, the City may increase total payment to one hundred (100%) percent of the Contract sum, less such retainage as the Engineer shall determine for incomplete work and unsettled claims. But such full payment or payments shall in no manner be construed as reducing the amount of the bond or the liability of the Surety thereon, until Final Completion and acceptance of all lines of work herein set forth. Final Payment shall be made upon completion of all work and acceptance by the Engineer in accordance with the General Conditions.

The action of the Engineer by which the Contractor is to be bound according to the terms of this Contract shall be evidenced by his final estimate and certificate, all prior estimates upon which ninety-five (95%) percent or more may be made, being merely payments on account, and not payments for accepted work, and subject to the corrections of such final estimate, which may be made without notice to the Contractor thereof, or of the measurements upon which the same is based.

§ 9.3.1 At least ten days before the date established for each progress payment, the Contractor shall submit to the Architect an itemized Application for Payment prepared in accordance with the schedule of values, if required under Section 9.2, for completed portions of the Work. Such application shall be ~~notarized, if required, certified by an officer of the firm~~ and supported by such data substantiating the Contractor's right to payment as the Owner or Architect may require, such as copies of requisitions from Subcontractors and material suppliers, and shall reflect retainage if provided for in the Contract Documents.

§ 9.3.1.1 As provided in Section 7.3.9, such applications may not include requests for payment on account of changes in the Work that have been properly authorized by Construction Change Directives, ~~or by interim determinations of the Architect,~~ but not yet included in Change Orders.

§ 9.3.1.2 Applications for Payment shall not include requests for payment for portions of the Work for which the Contractor does not intend to pay a Subcontractor or material supplier, unless such Work has been performed by others whom the Contractor intends to pay.

§ 9.3.2 Unless otherwise provided in the Contract Documents, payments shall be made on account of materials and equipment delivered and suitably stored at the site for subsequent incorporation in the Work. If approved in advance by the Owner, payment may similarly be made for materials and equipment suitably stored off the site at a location agreed upon in writing. Payment for materials and equipment stored on or off the site shall be conditioned upon compliance by the Contractor with procedures satisfactory to the Owner to establish the Owner's title to such

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materials and equipment or otherwise protect the Owner's interest, and shall include the costs of applicable insurance, storage and transportation to the site for such materials and equipment stored off the site.

§ 9.3.3 The Contractor warrants that title to all Work covered by an Application for Payment will pass to the Owner no later than the time of payment. The Contractor further warrants that upon submittal of an Application for Payment all Work for which Certificates for Payment have been previously issued and payments received from the Owner shall, to the best of the Contractor's knowledge, information and belief, be free and clear of liens, claims, security interests or encumbrances in favor of the Contractor, Subcontractors, material suppliers, or other persons or entities making a claim by reason of having provided labor, materials and equipment relating to the Work.

§ 9.4 CERTIFICATES FOR PAYMENT

§ 9.4.1 The Architect will, within seven days after receipt of the Contractor's Application for Payment, either issue to the Owner a Certificate for Payment, with a copy to the Contractor, for such amount as the Architect determines is properly due, or notify the Contractor and Owner in writing of the Architect's reasons for withholding certification in whole or in part as provided in Section 9.5.1.

§ 9.4.2 The issuance of a Certificate for Payment will constitute a representation by the Architect to the Owner, based on the Architect's evaluation of the Work and the data comprising the Application for Payment, that, to the best of the Architect's knowledge, information and belief, the Work has progressed to the point indicated and that the quality of the Work is in accordance with the Contract Documents. The foregoing representations are subject to an evaluation of the Work for conformance with the Contract Documents upon Substantial Completion, to results of subsequent tests and inspections, to correction of minor deviations from the Contract Documents prior to completion and to specific qualifications expressed by the Architect. The issuance of a Certificate for Payment will further constitute a representation that the Contractor is entitled to payment in the amount certified. However, the issuance of a Certificate for Payment will not be a representation that the Architect has (1) made exhaustive or continuous on-site inspections to check the quality or quantity of the Work, (2) reviewed construction means, methods, techniques, sequences or procedures, (3) reviewed copies of requisitions received from Subcontractors and material suppliers and other data requested by the Owner to substantiate the Contractor's right to payment, or (4) made examination to ascertain how or for what purpose the Contractor has used money previously paid on account of the Contract Sum.

§ 9.5 DECISIONS TO WITHHOLD CERTIFICATION

§ 9.5.1 The Architect may withhold a Certificate for Payment in whole or in part, to the extent reasonably necessary to protect the Owner, if in the Architect's opinion the representations to the Owner required by Section 9.4.2 cannot be made. If the Architect is unable to certify payment in the amount of the Application, the Architect will notify the Contractor and Owner as provided in Section 9.4.1. If the Contractor and Architect cannot agree on a revised amount, the Architect will promptly issue a Certificate for Payment for the amount for which the Architect is able to make such representations to the Owner. The Architect may also withhold a Certificate for Payment or, because of subsequently discovered evidence, may nullify the whole or a part of a Certificate for Payment previously issued, to such extent as may be necessary in the Architect's opinion to protect the Owner from loss for which the Contractor is responsible, including loss resulting from acts and omissions described in Section 3.3.2, because of

- .1 defective Work not remedied;
- .2 third party claims filed or reasonable evidence indicating probable filing of such claims unless security acceptable to the Owner is provided by the Contractor;
- .3 failure of the Contractor to make payments properly to Subcontractors or for labor, materials or equipment;
- .4 reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum;
- .5 damage to the Owner or a separate contractor;
- .6 reasonable evidence that the Work will not be completed within the Contract Time, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay; or
- .7 repeated failure to carry out the Work in accordance with the Contract Documents.
- .8 failure to comply with obligations under the Contract.

§ 9.5.2 When the above reasons for withholding certification are removed, certification will be made for amounts previously withheld. The City reserves the right to determine payment made.

§ 9.5.3 If the Architect withholds certification for payment under Section 9.5.1.3, the Owner may, at its sole option, issue joint checks to the Contractor and to any Subcontractor or material or equipment suppliers to whom the Contractor failed to make payment for Work properly performed or material or equipment suitably delivered. If the Owner makes payments by joint check, the Owner shall notify the Architect and the Architect will reflect such payment on the next Certificate for Payment.

§ 9.6 PROGRESS PAYMENTS

§ 9.6.1 After the Architect has issued a Certificate for Payment, the Owner shall make payment in the manner and within the time provided in the Contract Documents, and shall so notify the Architect.

§ 9.6.2 The Contractor ~~shall pay each Subcontractor no later than seven days after receipt of payment from the Owner the amount to which the Subcontractor is entitled, reflecting percentages actually retained from payments to the Contractor on account of the Subcontractor's portion of the Work. The Contractor shall, by appropriate agreement with each Subcontractor, require each Subcontractor to make payments to Sub-subcontractors in a similar manner is obligated to take one of the two following actions within seven (7) days after receipt of amounts paid to the Contractor by the Owner for work performed by any subcontractor under this Agreement:~~

a. Pay the subcontractor for the proportionate share of the total payment received from the Owner attributable to the work performed by the subcontractor under this Agreement; or

b. Notify the Owner and the subcontractor, in writing, of the Contractor's intention to withhold all or a part of the subcontractor's payment with the reason for nonpayment.

The Contractor is obligated to pay interest to the subcontractor on all amounts owed by the Contractor to the subcontractor that remain unpaid after seven (7) days following receipt by the Contractor of payment from the Owner for work performed by the subcontractor under this Agreement. Unless otherwise provided under the terms of this Agreement, interest shall accrue at the rate of one percent (1%) per month.

The Contractor shall include in each of its subcontracts, if any are permitted, a provision requiring each subcontractor to include or otherwise be subject to the same payment and interest requirements with respect to each lower-tier subcontractor.

The Contractor's obligation to pay an interest charge to a subcontractor pursuant to this section may not be construed to be an obligation of the City. A contract modification or Amendment to the Agreement may not be made for the purpose of providing reimbursement for such interest charge. A cost reimbursement claim may not include any amount for reimbursement for such interest charge.

§ 9.6.3 ~~The Architect will, on request, furnish to a Subcontractor, if practicable, information regarding percentages of completion or amounts applied for by the Contractor and action taken thereon by the Architect and Owner on account of portions of the Work done by such Subcontractor. A Subcontractor inquiry for progress payment and other information shall be directed to the City Attorney's office under the Freedom of Information Act.~~

§ 9.6.4 The Owner has the right to request written evidence from the Contractor that the Contractor has properly paid Subcontractors and material and equipment suppliers amounts paid by the Owner to the Contractor for subcontracted Work. If the Contractor fails to furnish such evidence within seven days, the Owner shall have the right to contact Subcontractors to ascertain whether they have been properly paid. Neither the Owner nor Architect shall have an obligation to pay or to see to the payment of money to a Subcontractor, except as may otherwise be required by law.

§ 9.6.5 Contractor payments to material and equipment suppliers shall be treated in a manner similar to that provided in Sections 9.6.2, 9.6.3 and 9.6.4.

§ 9.6.6 A Certificate for Payment, a progress payment, or partial or entire use or occupancy of the Project by the Owner shall not constitute acceptance of Work not in accordance with the Contract Documents.

§ 9.6.7 Unless the Contractor provides the Owner with a payment bond in the full penal sum of the Contract Sum, payments received by the Contractor for Work properly performed by Subcontractors and suppliers shall be held by

the Contractor for those Subcontractors or suppliers who performed Work or furnished materials, or both, under contract with the Contractor for which payment was made by the Owner. Nothing contained herein shall require money to be placed in a separate account and not commingled with money of the Contractor, shall create any fiduciary liability or tort liability on the part of the Contractor for breach of trust or shall entitle any person or entity to an award of punitive damages against the Contractor for breach of the requirements of this provision.

§ 9.7 FAILURE OF PAYMENT

If the Architect does not issue a Certificate for Payment, through no fault of the Contractor, within seven days after receipt of the Contractor's Application for Payment, or if the Owner does not pay the Contractor within seven days after the date established in the Contract Documents the amount certified by the Architect or awarded by binding dispute resolution, then the Contractor may, upon seven additional days' written notice to the Owner and Architect, stop the Work until payment of the amount owing has been received. The Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shut down, delay and start up, plus interest as provided for in the Contract Documents. Intentionally Omitted.

§ 9.8 SUBSTANTIAL COMPLETION

§ 9.8.1 Substantial Completion is the stage in the progress of the Work when the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work for its intended use.

§ 9.8.2 When the Contractor considers that the Work, or a portion thereof which the Owner agrees to accept separately, is substantially complete, the Contractor shall prepare and submit to the Architect a comprehensive list of items to be completed or corrected prior to final payment. Failure to include an item on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

§ 9.8.3 Upon receipt of the Contractor's list, the Architect will make an inspection to determine whether the Work or designated portion thereof is substantially complete. If the Architect's inspection discloses any item, whether or not included on the Contractor's list, which is not sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work or designated portion thereof for its intended use, the Contractor shall, before issuance of the Certificate of Substantial Completion, complete or correct such item upon notification by the Architect. In such case, the Contractor shall then submit a request for another inspection by the Architect to determine Substantial Completion.

§ 9.8.4 When the Work or designated portion thereof is substantially complete, the Architect will prepare a Certificate of Substantial Completion that shall establish the date of Substantial Completion, shall establish responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance, and shall fix the time within which the Contractor shall finish all items on the list accompanying the Certificate. Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion.

§ 9.8.5 The Certificate of Substantial Completion shall be submitted to the Owner and Contractor for their written acceptance of responsibilities assigned to them in such Certificate. Upon such acceptance and consent of surety, if any, the Owner shall make payment of retainage applying to such Work or designated portion thereof. Such payment shall be adjusted for Work that is incomplete or not in accordance with the requirements of the Contract Documents.

§ 9.9 PARTIAL OCCUPANCY OR USE

§ 9.9.1 The Owner may occupy or use any completed or partially completed portion of the Work at any stage when such portion is designated by separate agreement with the Contractor, provided such occupancy or use is consented to by the insurer as required under Section 11.3.1.5 and authorized by public authorities having jurisdiction over the Project. Such partial occupancy or use may commence whether or not the portion is substantially complete, provided the Owner and Contractor have accepted in writing the responsibilities assigned to each of them for payments, retainage, if any, security, maintenance, heat, utilities, damage to the Work and insurance, and have agreed in writing concerning the period for correction of the Work and commencement of warranties required by the Contract Documents. When the Contractor considers a portion substantially complete, the Contractor shall prepare and submit a list to the Architect as provided under Section 9.8.2. Consent of the Contractor to partial occupancy or use shall not be unreasonably withheld. The stage of the progress of the Work shall be determined by written agreement between the Owner and Contractor or, if no agreement is reached, by decision of the Architect.

§ 9.9.2 Immediately prior to such partial occupancy or use, the Owner, Contractor and Architect shall jointly inspect the area to be occupied or portion of the Work to be used in order to determine and record the condition of the Work.

§ 9.9.3 Unless otherwise agreed upon, partial occupancy or use of a portion or portions of the Work shall not constitute acceptance of Work not complying with the requirements of the Contract Documents.

§ 9.10 FINAL COMPLETION AND FINAL PAYMENT

§ 9.10.1 Upon receipt of the Contractor's written notice that the Work is ready for final inspection and acceptance and upon receipt of a final Application for Payment, the Architect will promptly make such inspection and, when the Architect finds the Work acceptable under the Contract Documents and the Contract fully performed, the Architect will promptly issue a final Certificate for Payment stating that to the best of the Architect's knowledge, information and belief, and on the basis of the Architect's on-site visits and inspections, the Work has been completed in accordance with terms and conditions of the Contract Documents and that the entire balance found to be due the Contractor and noted in the final Certificate is due and payable. The Architect's final Certificate for Payment will constitute a further representation that conditions listed in Section 9.10.2 as precedent to the Contractor's being entitled to final payment have been fulfilled.

§ 9.10.2 Neither final payment nor any remaining retained percentage shall become due until the Contractor submits to the Architect (1) an affidavit that payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the Owner or the Owner's property might be responsible or encumbered (less amounts withheld by Owner) have been paid or otherwise satisfied, (2) a certificate evidencing that insurance required by the Contract Documents to remain in force after final payment is currently in effect and will not be canceled or allowed to expire until at least 30 days' prior written notice has been given to the Owner, (3) a written statement that the Contractor knows of no substantial reason that the insurance will not be renewable to cover the period required by the Contract Documents, (4) consent of surety, if any, to final payment and (5), if required by the Owner, other data establishing payment or satisfaction of obligations, such as receipts, releases and waivers of liens, claims, security interests or encumbrances arising out of the Contract, to the extent and in such form as may be designated by the Owner. The Contractor shall submit a Contractor's release from liens, claims, security interests or encumbrances along with final invoice. If a Subcontractor refuses to furnish a release or waiver required by the Owner, the Contractor may furnish a bond satisfactory to the Owner to indemnify the Owner against such lien. If such lien remains unsatisfied after payments are made, the Contractor shall refund to the Owner all money that the Owner may be compelled to pay in discharging such lien, including all costs and reasonable attorneys' fees.

§ 9.10.3 If, after Substantial Completion of the Work, final completion thereof is materially delayed through no fault of the Contractor or by issuance of Change Orders affecting final completion, and the Architect so confirms, the Owner shall, upon application by the Contractor and certification by the Architect, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance for Work not fully completed or corrected is less than retainage stipulated in the Contract Documents, and if bonds have been furnished, the written consent of surety to payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by the Contractor to the Architect prior to certification of such payment. Such payment shall be made under terms and conditions governing final payment, except that it shall not constitute a waiver of claims.

§ 9.10.4 The making of final payment shall constitute a waiver of Claims by the Owner except those arising from

- .1 liens, Claims, security interests or encumbrances arising out of the Contract and unsettled;
- .2 failure of the Work to comply with the requirements of the Contract Documents; or
- .3 terms of special warranties required by the Contract Documents.

§ 9.10.5 Acceptance of final payment by the Contractor, a Subcontractor or material supplier shall constitute a waiver of claims by that payee except those previously made in writing and identified by that payee as unsettled at the time of final Application for Payment.

ARTICLE 10 PROTECTION OF PERSONS AND PROPERTY

§ 10.1 SAFETY PRECAUTIONS AND PROGRAMS

The Contractor shall be solely responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the performance of the Contract.

§ 10.2 SAFETY OF PERSONS AND PROPERTY

§ 10.2.1 The Contractor shall take reasonable precautions for safety of, and shall provide reasonable protection to prevent damage, injury or loss to

- .1 employees on the Work and other persons who may be affected thereby;
- .2 the Work and materials and equipment to be incorporated therein, whether in storage on or off the site, under care, custody or control of the Contractor or the Contractor's Subcontractors or Sub-subcontractors; and
- .3 other property at the site or adjacent thereto, such as trees, shrubs, lawns, walks, pavements, roadways, structures and utilities not designated for removal, relocation or replacement in the course of construction. The Contractor shall provide temporary fences, barricades, coverings, or other protection to preserve existing items indicated to remain and to prevent injury or damage to persons or property.

This includes providing protection of the Work, materials, appliances and fixtures against weather, rain, wind, storms, freezing or heat. At the end of the day's work, work likely to be damaged shall be properly protected. For work on existing buildings, the Contractor shall accomplish the work in such a manner that the remainder of the building, and its contents and inhabitants, are fully protected from any weather damage.

The Contractor shall be responsible for ensuring that adequate measures are taken to secure materials and equipment during the progress of the Work to prevent storm-related hazards. It is, therefore, essential that the Contractor take necessary precautions to ensure that openings in the building are monitored carefully. The Contractor shall take immediate actions required to seal off such openings when rain or other detrimental weather is imminent, and at the end of each workday; and ensure that the openings are completely sealed off to protect materials and equipment in the building from damage.

The provisions of this subparagraph take precedence over any similar provisions contained in the technical specifications.

§ 10.2.2 The Contractor shall comply with and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities bearing on safety of persons or property or their protection from damage, injury or loss.

§ 10.2.3 The Contractor shall erect and maintain, as required by existing conditions and performance of the Contract, reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards, promulgating safety regulations and notifying owners and users of adjacent sites and utilities.

§ 10.2.4 When use or storage of explosives or other hazardous materials or equipment or unusual methods are necessary for execution of the Work, the Contractor shall exercise utmost care and carry on such activities under supervision of properly qualified personnel.

§ 10.2.5 The Contractor shall promptly remedy damage and loss (other than damage or loss insured under property insurance required by the Contract Documents) to property referred to in Sections 10.2.1.2 and 10.2.1.3 caused in whole or in part by the Contractor, a Subcontractor, a Sub-subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts they may be liable and for which the Contractor is responsible under Sections 10.2.1.2 and 10.2.1.3, except damage or loss attributable to acts or omissions of the Owner or Architect or anyone directly or indirectly employed by either of them, or by anyone for whose acts either of them may be liable, and not attributable to the fault or negligence of the Contractor. The foregoing obligations of the Contractor are in addition to the Contractor's obligations under Section 3.18.

§ 10.2.6 The Contractor shall designate a responsible member of the Contractor's organization at the site whose duty shall be the prevention of accidents. This person shall be the Contractor's superintendent unless otherwise designated by the Contractor in writing to the Owner and Architect.

§ 10.2.7 The Contractor shall not permit any part of the construction or site to be loaded so as to cause damage or create an unsafe condition.

§ 10.2.8 INJURY OR DAMAGE TO PERSON OR PROPERTY

If either party suffers injury or damage to person or property because of an act or omission of the other party, or of others for whose acts such party is legally responsible, written notice of such injury or damage, whether or not insured, shall be given to the other party within a reasonable time not exceeding 21 days after discovery. The notice shall provide sufficient detail to enable the other party to investigate the matter.

§ 10.3 HAZARDOUS MATERIALS

§ 10.3.1 The Contractor is responsible for compliance with any requirements included in the Contract Documents regarding hazardous materials. If the Contractor encounters a hazardous material or substance not addressed in the Contract Documents and if reasonable precautions will be inadequate to prevent foreseeable bodily injury or death to persons resulting from a material or substance, including but not limited to asbestos or polychlorinated biphenyl (PCB), encountered on the site by the Contractor, the Contractor shall, upon recognizing the condition, immediately stop Work in the affected area and report the condition to the Owner and Architect in writing.

§ 10.3.2 Upon receipt of the Contractor's written notice, the Owner shall obtain the services of a licensed laboratory to verify the presence or absence of the material or substance reported by the Contractor and, in the event such material or substance is found to be present, to cause it to be rendered harmless. Unless otherwise required by the Contract Documents, the Owner shall furnish in writing to the Contractor and Architect the names and qualifications of persons or entities who are to perform tests verifying the presence or absence of such material or substance or who are to perform the task of removal or safe containment of such material or substance. The Contractor and the Architect will promptly reply to the Owner in writing stating whether or not either has reasonable objection to the persons or entities proposed by the Owner. ~~If either the Contractor or Architect has an objection to a person or entity proposed by the Owner, the Owner shall propose another to whom the Contractor and the Architect have no reasonable objection.~~ Owner. When the material or substance has been rendered harmless, Work in the affected area shall resume upon written agreement of the Owner ~~direction by the City~~ and Contractor. By Change Order, the Contract Time shall be extended appropriately and the Contract Sum shall be increased in the amount of the Contractor's reasonable additional costs of shut-down, delay and start-up.

~~§ 10.3.3 To the fullest extent permitted by law, the Owner shall indemnify and hold harmless the Contractor, Subcontractors, Architect, Architect's consultants and agents and employees of any of them from and against claims, damages, losses and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work in the affected area if in fact the material or substance presents the risk of bodily injury or death as described in Section 10.3.1 and has not been rendered harmless, provided that such claim, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), except to the extent that such damage, loss or expense is due to the fault or negligence of the party seeking indemnity.~~

§ 10.3.3. Intentionally Omitted.

§ 10.3.4 The Owner shall not be responsible under this Section 10.3 for materials or substances the Contractor brings to the site ~~unless such materials or substances are required by the Contract Documents.~~ site. The Owner shall be responsible for materials or substances required by the Contract Documents, except to the extent of the Contractor's fault or negligence in the use and handling of such materials or substances.

§ 10.3.5 The Contractor shall indemnify the Owner for the cost and expense the Owner incurs (1) for remediation of a material or substance the Contractor brings to the site and negligently handles, or (2) where the Contractor fails to perform its obligations under Section 10.3.1, except to the extent that the cost and expense are due to the Owner's fault or negligence.

§ 10.3.6 If, without negligence on the part of the Contractor, the Contractor is held liable by a government agency for the cost of remediation of a hazardous material or substance solely by reason of performing Work as required by the Contract Documents, the Owner shall indemnify the Contractor for all cost and expense thereby incurred.

§ 10.4 EMERGENCIES

In an emergency affecting safety of persons or property, the Contractor shall act, at the Contractor's discretion, to prevent threatened damage, injury or loss. Additional compensation or extension of time claimed by the Contractor on account of an emergency shall be determined as provided in Article 15 and Article 7.

§ 10.4.1 EMERGENCY CONDITIONS. The issuance of a Declaration of Emergency conditions by any authorized government official may result in the suspension of the Work under the Contract and/or the ordering by the City of additional work. The Contractor shall make available to the City, during the time of the declared emergency, labor and equipment for such services under the terms and conditions of the Contract. Labor and equipment rates shall not exceed FEMA reimbursable rates for the Hampton Roads area. Failure to comply with such emergency directives may result in termination of the Contract by reason of non-compliance.

ARTICLE 11 INSURANCE AND BONDS

§ 11.1 CONTRACTOR'S LIABILITY INSURANCE

See Subparagraphs 3.18.1 and 10.3.1

§ 11.1.1 The Contractor shall purchase from and maintain in a company or companies lawfully authorized to do business in the jurisdiction in which the Project is located such insurance as will protect the Contractor from claims set forth below which may arise out of or result from the Contractor's operations and completed operations under the Contract and for which the Contractor may be legally liable, whether such operations be by the Contractor or by a Subcontractor or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable:

- .1 Claims under workers' compensation, disability benefit and other similar employee benefit acts that are applicable to the Work to be performed;
- .2 Claims for damages because of bodily injury, occupational sickness or disease, or death of the Contractor's employees;
- .3 Claims for damages because of bodily injury, sickness or disease, or death of any person other than the Contractor's employees;
- .4 Claims for damages insured by usual personal injury liability coverage;
- .5 Claims for damages, other than to the Work itself, because of injury to or destruction of tangible property, including loss of use resulting therefrom;
- .6 Claims for damages because of bodily injury, death of a person or property damage arising out of ownership, maintenance or use of a motor vehicle;
- .7 Claims for bodily injury or property damage arising out of completed operations; and
- .8 Claims involving contractual liability insurance applicable to the Contractor's obligations under Section 3.18.

§ 11.1.2 The insurance required by Section 11.1.1 shall be written for not less than limits of liability. All liability policies shall be written in an occurrence form unless otherwise specifically approved by the City.

The Contractor shall secure and maintain in force insurance, including malicious mischief and vandalism, with minimum acceptable amounts described below, naming the City as additional insured during the life of the Contract:

.1	Worker's Compensation	Statutory
	Employer's Liability	\$200,000 per accident injury
.2	Commercial General Liability	Combined single limit \$3,000,000 or
		\$2,000,000 per occurrence
		\$3,000,000 aggregate
		\$3,000,000 products & completed
		Operations

The Commercial General Liability Insurance required above shall include the following extensions of coverage:

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- (1) The coverage shall be provided under a Comprehensive form of policy or similar thereto.
- (2) X.C.U. Coverage – If the Contract requires any work procedures involving blasting, excavating, tunneling or other underground work, the liability coverage shall include Standard Blasting or Explosion Coverage, Standard Collapse Coverage and Standard Underground Coverage, commonly referred to as XCU liability coverage with limits of \$500,000 per occurrence and \$1,000,000 aggregate.
- (3) Broad Form Property Damage Endorsement.
- (4) Contractual Liability coverage shall be included.
- (5) Protective Liability coverage shall be included to protect the Contractor against claims arising out of operations performed by its Subcontractors.
- (6) Products Liability and/or Completed Operations coverage shall be included.

.3 Comprehensive Automobile Liability including owned, non-owned and hired vehicles:

Combined Single limit each accident	\$2,000,000
Bodily Injured	\$1,000,000 per person \$2,000,000 per occurrence \$2,000,000 aggregate
Property Damage	\$500,000 per occurrence

.4 Environmental Impairment Liability Insurance. If applicable, as determined by the City, the Contractor shall procure and maintain during the life of the Contract Environmental Impairment Liability Insurance, which shall protect against all claims and costs including, but not limited to, bodily injury or property damage claims (including clean-up costs) caused by pollution conditions, as herein defined, arising from the contracted work. Pollution conditions means the discharge, dispersal, release or escape of smoke vapor, soot, fumes, acids, alkalis, toxic chemicals, liquids, gases, waste materials or other irritants, contaminants, or pollutants into or upon land, the atmosphere or any watercourse or body of water, which results in bodily injury or property damage. The policy limits will be determined by the City and specified in the Contract Documents or required by law, whichever coverage is greater. Coverages, whether written on an occurrence or as prescribed by City, State or Federal law/regulations. Coverages, written on a claims-made basis, shall be maintained without interruption from the date of commencement of the Work until at least one year following the date of final payment and termination of any coverage required to be maintained after final payment; and, with respect to the Contractor's completed operations coverage, until the expiration of the period for correction of Work or for such other period for maintenance of completed operations coverage as specified in the Contract Documents.

§ 11.1.3 All insurance policies required hereunder shall contain an express provision therein, or endorsement attached thereto, worded substantially as follows:

"This is not to be cancelled or become subject to reduction of coverage prior to thirty days after the insured has received written notice mailed to the address noted hereinbefore, as evidenced by return receipt of registered letter."

All insurance certificates and/or policies shall designate the City of Norfolk, its employees, and its agents as "additional insured" regarding the contracted Work.

Certificates of Insurance issued by companies licensed within the Commonwealth of Virginia shall provide the designed insurance.

Contractor shall notify the City in writing within 10 days after receiving notice of any cancellation or reduction in coverage.

Certificates of insurance acceptable to the Owner shall be filed with the Owner prior to commencement of the Work and thereafter upon renewal or replacement of each required policy of insurance. These certificates and the insurance policies required by this Section 11.1 shall contain a provision that coverages afforded under the policies

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will not be canceled or allowed to expire until at least 30 days' prior written notice has been given to the Owner. An additional certificate evidencing continuation of liability coverage, including coverage for completed operations, shall be submitted with the final Application for Payment as required by Section 9.10.2 and thereafter upon renewal or replacement of such coverage until the expiration of the time required by Section 11.1.2. Information concerning reduction of coverage on account of revised limits or claims paid under the General Aggregate, or both, shall be furnished by the Contractor with reasonable promptness.

~~§ 11.1.4 The Contractor shall cause the commercial liability coverage required by the Contract Documents to include (1) the Owner, the Architect and the Architect's consultants as additional insureds for claims caused in whole or in part by the Contractor's negligent acts or omissions during the Contractor's operations; and (2) the Owner as an additional insured for claims caused in whole or in part by the Contractor's negligent acts or omissions during the Contractor's completed operations.~~**SUBCONTRACTOR'S INSURANCE.** The Contractor shall require all subcontractors to secure and maintain in force containing the same coverage and amounts as described in Subparagraph 11.1.2.

§ 11.2 OWNER'S LIABILITY INSURANCE

~~The Owner shall be responsible for purchasing and maintaining the Owner's usual liability insurance.~~
Intentionally Omitted.

§ 11.3 PROPERTY INSURANCE

~~§ 11.3.1 Unless otherwise provided, the Owner shall purchase and maintain, in a company or companies lawfully authorized to do business in the jurisdiction in which the Project is located, property insurance written on a builder's risk "all risk" or equivalent policy form in the amount of the initial Contract Sum, plus value of subsequent Contract Modifications and cost of materials supplied or installed by others, comprising total value for the entire Project at the site on a replacement cost basis without optional deductibles. Such property insurance shall be maintained, unless otherwise provided in the Contract Documents or otherwise agreed in writing by all persons and entities who are beneficiaries of such insurance, until final payment has been made as provided in Section 9.10 or until no person or entity other than the Owner has an insurable interest in the property required by this Section 11.3 to be covered, whichever is later. This insurance shall include interests of the Owner, the Contractor, Subcontractors and Sub-subcontractors in the Project.~~Until the work is completed and accepted by the City, the Contractor shall purchase and maintain a Builder's Risk or property insurance as is appropriate upon the entire work at the Site to the full insurable value thereof.

~~§ 11.3.1.1 Property insurance shall be on an "all-risk" or equivalent policy form and shall include, without limitation, insurance against the perils of fire (with extended coverage) and physical loss or damage including, without duplication of coverage, theft, vandalism, malicious mischief, collapse, earthquake, flood, windstorm, falsework, testing and startup, temporary buildings and debris removal including demolition occasioned by enforcement of any applicable legal requirements, and shall cover reasonable compensation for Architect's and Contractor's services and expenses required as a result of such insured loss.~~

~~§ 11.3.1.2 If the Owner does not intend to purchase such property insurance required by the Contract and with all of the coverages in the amount described above, the Owner shall so inform the Contractor in writing prior to commencement of the Work. The Contractor may then effect insurance that will protect the interests of the Contractor, Subcontractors and Sub-subcontractors in the Work, and by appropriate Change Order the cost thereof shall be charged to the Owner. If the Contractor is damaged by the failure or neglect of the Owner to purchase or maintain insurance as described above, without so notifying the Contractor in writing, then the Owner shall bear all reasonable costs properly attributable thereto.~~

~~§ 11.3.1.3 If the property insurance requires deductibles, the Owner shall pay costs not covered because of such deductibles.~~

~~§ 11.3.1.4 This property insurance shall cover portions of the Work stored off the site, and also portions of the Work in transit.~~

~~§ 11.3.1.5 Partial occupancy or use in accordance with Section 9.9 shall not commence until the insurance company or companies providing property insurance have consented to such partial occupancy or use by endorsement or otherwise. The Owner and the Contractor shall take reasonable steps to obtain consent of the insurance company or~~

companies and shall, without mutual written consent, take no action with respect to partial occupancy or use that would cause cancellation, lapse or reduction of insurance.

§ 11.3.1.1. Intentionally Omitted.

§ 11.3.1.2. Intentionally Omitted.

§ 11.3.1.3. Intentionally Omitted.

§ 11.3.1.4. Intentionally Omitted.

§ 11.3.1.5. Intentionally Omitted.

§ 11.3.2 BOILER AND MACHINERY INSURANCE

~~The Owner shall purchase and maintain boiler and machinery insurance required by the Contract Documents or by law, which shall specifically cover such insured objects during installation and until final acceptance by the Owner; this insurance shall include interests of the Owner, Contractor, Subcontractors and Sub-subcontractors in the Work, and the Owner and Contractor shall be named insureds.~~ Intentionally Omitted.

§ 11.3.3 LOSS OF USE INSURANCE

The Owner, at the Owner's option, may purchase and maintain such insurance as will insure the Owner against loss of use of the Owner's property due to fire or other hazards, however caused. The Owner waives all rights of action against the Contractor for loss of use of the Owner's property, including consequential losses due to fire or other hazards however caused.

§ 11.3.4 If the Contractor requests in writing that insurance for risks other than those described herein or other special causes of loss be included in the property insurance policy, the Owner shall, if possible, include such insurance, and the cost thereof shall be charged to the Contractor by appropriate Change Order.

§ 11.3.5 If during the Project construction period the Owner insures properties, real or personal or both, at or adjacent to the site by property insurance under policies separate from those insuring the Project, or if after final payment property insurance is to be provided on the completed Project through a policy or policies other than those insuring the Project during the construction period, the Owner shall waive all rights in accordance with the terms of Section 11.3.7 for damages caused by fire or other causes of loss covered by this separate property insurance. All separate policies shall provide this waiver of subrogation by endorsement or otherwise.

§ 11.3.6 Before an exposure to loss may occur, the Owner shall file with the Contractor a copy of each policy that includes insurance coverages required by this Section 11.3. Each policy shall contain all generally applicable conditions, definitions, exclusions and endorsements related to this Project. Each policy shall contain a provision that the policy will not be canceled or allowed to expire, and that its limits will not be reduced, until at least 30 days' prior written notice has been given to the Contractor.

§ 11.3.7 WAIVERS OF SUBROGATION

The Owner and Contractor waive all rights against (1) each other and any of their subcontractors, sub-subcontractors, agents and employees, each of the other, and (2) the Architect, Architect's consultants, separate contractors described in Article 6, if any, and any of their subcontractors, sub-subcontractors, agents and employees, for damages caused by fire or other causes of loss to the extent covered by property insurance obtained pursuant to this Section 11.3 or other property insurance applicable to the Work, except such rights as they have to proceeds of such insurance held by the Owner as fiduciary. The Owner or Contractor, as appropriate, shall require of the Architect, Architect's consultants, separate contractors described in Article 6, if any, and the subcontractors, sub-subcontractors, agents and employees of any of them, by appropriate agreements, written where legally required for validity, similar waivers each in favor of other parties enumerated herein. The policies shall provide such waivers of subrogation by endorsement or otherwise. A waiver of subrogation shall be effective as to a person or entity even though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, did not pay the insurance premium directly or indirectly, and whether or not the person or entity had an insurable interest in the property damaged.

§ 11.3.8 A loss insured under the Owner's property insurance shall be adjusted by the Owner as fiduciary and made payable to the Owner as fiduciary for the insureds, as their interests may appear, subject to requirements of any applicable mortgagee clause and of Section 11.3.10. The Contractor shall pay Subcontractors their just shares of insurance proceeds received by the Contractor, and by appropriate agreements, written where legally required for validity, shall require Subcontractors to make payments to their Sub-subcontractors in similar manner.

§ 11.3.9 If required in writing by a party in interest, the Owner as fiduciary shall, upon occurrence of an insured loss, give bond for proper performance of the Owner's duties. The cost of required bonds shall be charged against proceeds received as fiduciary. The Owner shall deposit in a separate account proceeds so received, which the Owner shall distribute in accordance with such agreement as the parties in interest may reach, or as determined in accordance with the method of binding dispute resolution selected in the Agreement between the Owner and Contractor. If after such loss no other special agreement is made and unless the Owner terminates the Contract for convenience, replacement of damaged property shall be performed by the Contractor after notification of a Change in the Work in accordance with Article 7.

§ 11.3.10 The Owner as fiduciary shall have power to adjust and settle a loss with insurers unless one of the parties in interest shall object in writing within five days after occurrence of loss to the Owner's exercise of this power; if such objection is made, the dispute shall be resolved in the manner selected by the Owner and Contractor as the method of binding dispute resolution in the Agreement. If the Owner and Contractor have selected arbitration as the method of binding dispute resolution, the Owner as fiduciary shall make settlement with insurers or, in the case of a dispute over distribution of insurance proceeds, in accordance with the directions of the arbitrators.

§ 11.4 PERFORMANCE BOND AND PAYMENT BOND

§ 11.4.1 The Owner shall have the right to require the Contractor to furnish bonds covering faithful performance of the Contract and payment of obligations arising thereunder as stipulated in bidding requirements or specifically required in the Contract Documents on the date of execution of the Contract.

§ 11.4.2 Upon the request of any person or entity appearing to be a potential beneficiary of bonds covering payment of obligations arising under the Contract, the Contractor shall promptly furnish a copy of the bonds or shall authorize a copy to be furnished. A Performance Bond and Payment Bond Rider is required for all Change Orders that are in the amount of \$100,000 or greater; or, if the aggregate total of multiple Change Orders is equal to or greater than \$100,000.

ARTICLE 12 UNCOVERING AND CORRECTION OF WORK

§ 12.1 UNCOVERING OF WORK

§ 12.1.1 If a portion of the Work is covered contrary to the Architect's request or to requirements specifically expressed in the Contract Documents, it must, if requested in writing by the Architect, be uncovered for the Architect's examination and be replaced at the Contractor's expense without change in the Contract Time.

§ 12.1.2 If a portion of the Work has been covered that the Architect has not specifically requested to examine prior to its being covered, the Architect may request to see such Work and it shall be uncovered by the Contractor. If such Work is in accordance with the Contract Documents, costs of uncovering and replacement shall, by appropriate Change Order, be at the Owner's expense. If such Work is not in accordance with the Contract Documents, such costs and the cost of correction shall be at the Contractor's expense unless the condition was caused by the Owner or a separate contractor in which event the Owner shall be responsible for payment of such costs.

§ 12.2 CORRECTION OF WORK

§ 12.2.1 BEFORE OR AFTER SUBSTANTIAL COMPLETION

The Contractor shall promptly correct Work rejected by the Architect or failing to conform to the requirements of the Contract Documents, whether discovered before or after Substantial Completion and whether or not fabricated, installed or completed. Costs of correcting such rejected Work, including additional testing and inspections, the cost of uncovering and replacement, and compensation for the Architect's services and expenses made necessary thereby, shall be at the Contractor's expense.

§ 12.2.2 AFTER SUBSTANTIAL COMPLETION

§ 12.2.2.1 In addition to the Contractor's obligations under Section 3.5, if, within one year after the date of Substantial Completion of the Work or designated portion thereof or after the date for commencement of warranties

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established under Section 9.9.1, or by terms of an applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of written notice from the Owner to do so unless the Owner has previously given the Contractor a written acceptance of such condition. The Owner shall give such notice promptly after discovery of the condition. During the one-year period for correction of Work, if the Owner fails to notify the Contractor and give the Contractor an opportunity to make the correction, the Owner waives the rights to require correction by the Contractor and to make a claim for breach of warranty. If the Contractor fails to correct nonconforming Work within a reasonable time during that period after receipt of notice from the Owner or Architect, the Owner may correct it in accordance with Section 2.4.

§ 12.2.2.2 The one-year period for correction of Work shall be extended with respect to portions of Work first performed after Substantial Completion by the period of time between Substantial Completion and the actual completion of that portion of the Work.

~~§ 12.2.2.3 The one-year period for correction of Work shall not be extended by corrective Work performed by the Contractor pursuant to this Section 12.2.~~

§ 12.2.2.3. Intentionally Omitted.

§ 12.2.3 The Contractor shall remove from the site portions of the Work that are not in accordance with the requirements of the Contract Documents and are neither corrected by the Contractor nor accepted by the Owner.

§ 12.2.4 The Contractor shall bear the cost of correcting destroyed or damaged construction, whether completed or partially completed, of the Owner or separate contractors caused by the Contractor's correction or removal of Work that is not in accordance with the requirements of the Contract Documents.

§ 12.2.5 Nothing contained in this Section 12.2 shall be construed to establish a period of limitation with respect to other obligations the Contractor has under the Contract Documents. Establishment of the one-year period for correction of Work as described in Section 12.2.2 relates only to the specific obligation of the Contractor to correct the Work, and has no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to the Contractor's obligations other than specifically to correct the Work.

§ 12.3 ACCEPTANCE OF NONCONFORMING WORK

If the Owner prefers to accept Work that is not in accordance with the requirements of the Contract Documents, the Owner may do so instead of requiring its removal and correction, in which case the Contract Sum will be reduced as appropriate and equitable. Such adjustment shall be effected whether or not final payment has been made.

ARTICLE 13 MISCELLANEOUS PROVISIONS

§ 13.1 GOVERNING LAW

The Contract shall be governed by the law of the place where the Project is located except that, if the parties have selected arbitration as the method of binding dispute resolution, the Federal Arbitration Act shall govern Section 15.4.

§ 13.2 SUCCESSORS AND ASSIGNS

§ 13.2.1 The Owner and Contractor respectively bind themselves, their partners, successors, assigns and legal representatives to covenants, agreements and obligations contained in the Contract Documents. Except as provided in Section 13.2.2, neither party to the Contract shall assign the Contract as a whole without written consent of the other. If either party attempts to make such an assignment without such consent, that party shall nevertheless remain legally responsible for all obligations under the Contract.

§ 13.2.2 The Owner may, without consent of the Contractor, assign the Contract to a lender providing construction financing for the Project, if the lender assumes the Owner's rights and obligations under the Contract Documents. The Contractor shall execute all consents reasonably required to facilitate such assignment.

§ 13.3 WRITTEN NOTICE

Written notice shall be deemed to have been duly served if delivered in person to the individual, to a member of the firm or entity, or to an officer of the corporation for which it was intended; or if delivered at, or sent by registered or certified mail or by courier service providing proof of delivery to, the last business address known to the party giving notice.

§ 13.4 RIGHTS AND REMEDIES

§ 13.4.1 Duties and obligations imposed by the Contract Documents and rights and remedies available thereunder shall be in addition to and not a limitation of duties, obligations, rights and remedies otherwise imposed or available by law.

§ 13.4.2 No action or failure to act by the Owner, Architect or Contractor shall constitute a waiver of a right or duty afforded them under the Contract, nor shall such action or failure to act constitute approval of or acquiescence in a breach there under, except as may be specifically agreed in writing.

§ 13.5 TESTS AND INSPECTIONS

§ 13.5.1 Tests, inspections and approvals of portions of the Work shall be made as required by the Contract Documents and by applicable laws, statutes, ordinances, codes, rules and regulations or lawful orders of public authorities. Unless otherwise provided, the Contractor shall make arrangements for such tests, inspections and approvals with an independent testing laboratory or entity acceptable to the Owner, or with the appropriate public authority, and shall bear all related costs of tests, inspections and approvals. The Contractor shall give the Architect timely notice of when and where tests and inspections are to be made so that the Architect may be present for such procedures. The Owner shall bear costs of (1) tests, inspections or approvals that do not become requirements until after bids are received or negotiations concluded, and (2) tests, inspections or approvals where building codes or applicable laws or regulations prohibit the Owner from delegating their cost to the Contractor.

§ 13.5.2 If the Architect, Owner or public authorities having jurisdiction determine that portions of the Work require additional testing, inspection or approval not included under Section 13.5.1, the Architect will, upon written authorization from the Owner, instruct the Contractor to make arrangements for such additional testing, inspection or approval by an entity acceptable to the Owner, and the Contractor shall give timely notice to the Architect of when and where tests and inspections are to be made so that the Architect may be present for such procedures. Such costs, except as provided in Section 13.5.3, shall be at the Owner's expense.

§ 13.5.3 If such procedures for testing, inspection or approval under Sections 13.5.1 and 13.5.2 reveal failure of the portions of the Work to comply with requirements established by the Contract Documents, all costs made necessary by such failure including those of repeated procedures and compensation for the Architect's services and expenses shall be at the Contractor's expense.

§ 13.5.4 Required certificates of testing, inspection or approval shall, unless otherwise required by the Contract Documents, be secured by the Contractor and promptly delivered to the Architect.

§ 13.5.5 If the Architect is to observe tests, inspections or approvals required by the Contract Documents, the Architect will do so promptly and, where practicable, at the normal place of testing.

§ 13.5.6 Tests or inspections conducted pursuant to the Contract Documents shall be made promptly to avoid unreasonable delay in the Work.

§ 13.6 INTEREST

~~Payments due and unpaid under the Contract Documents shall bear interest from the date payment is due at such rate as the parties may agree upon in writing or, in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.~~ Intentionally Omitted.

§ 13.7 TIME LIMITS ON CLAIMS

The Owner and Contractor shall commence all claims and causes of action, whether in contract, tort, breach of warranty or otherwise, against the other arising out of or related to the Contract in accordance with the requirements of the final dispute resolution method selected in the Agreement within the time period specified by applicable law,

but in any case not more than 10 years after the date of Substantial Completion of the Work. The Owner and Contractor waive all claims and causes of action not commenced in accordance with this Section 13.7.

ARTICLE 14 TERMINATION OR SUSPENSION OF THE CONTRACT

§ 14.1 TERMINATION BY THE CONTRACTOR

~~§ 14.1.1 The Contractor may terminate the Contract if the Work is stopped for a period of 30 consecutive days through no act or fault of the Contractor or a Subcontractor, Sub-subcontractor or their agents or employees or any other persons or entities performing portions of the Work under direct or indirect contract with the Contractor, for any of the following reasons:~~

- ~~.1 Issuance of an order of a court or other public authority having jurisdiction that requires all Work to be stopped;~~
- ~~.2 An act of government, such as a declaration of national emergency that requires all Work to be stopped;~~
- ~~.3 Because the Architect has not issued a Certificate for Payment and has not notified the Contractor of the reason for withholding certification as provided in Section 9.4.1, or because the Owner has not made payment on a Certificate for Payment within the time stated in the Contract Documents; or~~
- ~~.4 The Owner has failed to furnish to the Contractor promptly, upon the Contractor's request, reasonable evidence as required by Section 2.2.1.~~

~~§ 14.1.2 The Contractor may terminate the Contract if, through no act or fault of the Contractor or a Subcontractor, Sub-subcontractor or their agents or employees or any other persons or entities performing portions of the Work under direct or indirect contract with the Contractor, repeated suspensions, delays or interruptions of the entire Work by the Owner as described in Section 14.3 constitute in the aggregate more than 100 percent of the total number of days scheduled for completion, or 120 days in any 365-day period, whichever is less.~~

~~§ 14.1.3 If one of the reasons described in Section 14.1.1 or 14.1.2 exists, the Contractor may, upon seven days' written notice to the Owner and Architect, terminate the Contract and recover from the Owner payment for Work executed, including reasonable overhead and profit, costs incurred by reason of such termination, and damages.~~

~~§ 14.1.4 If the Work is stopped for a period of 60 consecutive days through no act or fault of the Contractor or a Subcontractor or their agents or employees or any other persons performing portions of the Work under contract with the Contractor because the Owner has repeatedly failed to fulfill the Owner's obligations under the Contract Documents with respect to matters important to the progress of the Work, the Contractor may, upon seven additional days' written notice to the Owner and the Architect, terminate the Contract and recover from the Owner as provided in Section 14.1.3.~~

§ 14.1.1. Intentionally Omitted

- .1 ;
- .2 ;
- .3
- .4 .

§ 14.1.2. Intentionally Omitted.

§ 14.1.3. Intentionally Omitted

§ 14.1.4. Intentionally Omitted

§ 14.2 TERMINATION BY THE OWNER FOR CAUSE

§ 14.2.1 The Owner may terminate the Contract if the Contractor

- .1 repeatedly refuses or fails to supply enough properly skilled workers or proper materials;
- .2 fails to make payment to Subcontractors for materials or labor in accordance with the respective agreements between the Contractor and the Subcontractors;
- .3 repeatedly disregards applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of a public authority; or
- .4 otherwise is guilty of substantial breach of a provision of the Contract Documents.

§ 14.2.2 When any of the above reasons exist, the Owner, ~~upon certification by the Initial Decision Maker that sufficient cause exists to justify such action,~~ may without prejudice to any other rights or remedies of the Owner and after giving the Contractor and the Contractor's surety, if any, seven days' written notice, terminate employment of the Contractor and may, subject to any prior rights of the surety:

- .1 Exclude the Contractor from the site and take possession of all materials, equipment, tools, and construction equipment and machinery thereon owned by the Contractor;
- .2 Accept assignment of subcontracts pursuant to Section 5.4; and
- .3 Finish the Work by whatever reasonable method the Owner may deem expedient. Upon written request of the Contractor, the Owner shall furnish to the Contractor a detailed accounting of the costs incurred by the Owner in finishing the Work.

§ 14.2.3 When the Owner terminates the Contract for one of the reasons stated in Section 14.2.1, the Contractor shall not be entitled to receive further payment until the Work is finished.

§ 14.2.4 If the unpaid balance of the Contract Sum exceeds costs of finishing the Work, including compensation for the Architect's services and expenses made necessary thereby, and other damages incurred by the Owner and not expressly waived, such excess shall be paid to the Contractor. If such costs and damages exceed the unpaid balance, the Contractor shall pay the difference to the Owner. The amount to be paid to the Contractor or Owner, as the case may be, shall be certified by the Initial Decision Maker, upon application, and this obligation for payment shall survive termination of the Contract.

§ 14.3 SUSPENSION BY THE OWNER FOR CONVENIENCE

§ 14.3.1 The Owner may, without cause, order the Contractor in writing to suspend, delay or interrupt the Work in whole or in part for such period of time as the Owner may determine.

§ 14.3.2 The Contract Sum and Contract Time shall be adjusted for increases in the cost and time caused by suspension, delay or interruption as described in Section 14.3.1. Adjustment of the Contract Sum shall include profit. No adjustment shall be made to the extent

- .1 that performance is, was or would have been so suspended, delayed or interrupted by another cause for which the Contractor is responsible; or
- .2 that an equitable adjustment is made or denied under another provision of the Contract.

§ 14.4 TERMINATION BY THE OWNER FOR CONVENIENCE

§ 14.4.1 The Owner may, at any time, terminate the Contract for the Owner's convenience and without cause.

§ 14.4.2 Upon receipt of written notice from the Owner of such termination for the Owner's convenience, the Contractor shall

- .1 cease operations as directed by the Owner in the notice;
- .2 take actions necessary, or that the Owner may direct, for the protection and preservation of the Work; and
- .3 except for Work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing subcontracts and purchase orders and enter into no further subcontracts and purchase orders.

§ 14.4.3 In case of such termination for the Owner's convenience, the Contractor shall be entitled to receive payment for Work executed, and costs incurred by reason of such termination, along with reasonable overhead and profit on the Work not ~~executed~~ executed and costs incurred from this termination.

ARTICLE 15 CLAIMS AND DISPUTES

§ 15.1 CLAIMS

§ 15.1.1 DEFINITION

A Claim is a demand or assertion by one of the parties seeking, as a matter of right, payment of money, or other relief with respect to the terms of the Contract. The term "Claim" also includes other disputes and matters in question between the Owner and Contractor arising out of or relating to the Contract. The responsibility to substantiate Claims shall rest with the party making the Claim.

§ 15.1.2 NOTICE OF CLAIMS

Claims by either the Owner or Contractor must be initiated by written notice to the other party and to the Initial Decision Maker with a copy sent to the Architect, if the Architect is not serving as the Initial Decision Maker. Claims by either party must be initiated within 21 days after occurrence of the event giving rise to such Claim or within 21 days after the claimant first recognizes the condition giving rise to the Claim, whichever is later.

§ 15.1.3 CONTINUING CONTRACT PERFORMANCE

Pending final resolution of a Claim, except as otherwise agreed in writing or as provided in Section 9.7 and Article 14, the Contractor shall proceed diligently with performance of the Contract and the Owner shall continue to make payments in accordance with the Contract Documents. The Architect will prepare Change Orders and issue Certificates for Payment in accordance with the decisions of the Initial Decision Maker.

§ 15.1.4 CLAIMS FOR ADDITIONAL COST

If the Contractor wishes to make a Claim for an increase in the Contract Sum, written notice as provided herein shall be given before proceeding to execute the Work. Prior notice is not required for Claims relating to an emergency endangering life or property arising under Section 10.4.

§ 15.1.5 CLAIMS FOR ADDITIONAL TIME

§ 15.1.5.1 If the Contractor wishes to make a Claim for an increase in the Contract Time, written notice as provided herein shall be given. The Contractor's Claim shall include an estimate of cost and of probable effect of delay on progress of the Work. In the case of a continuing delay, only one Claim is necessary.

§ 15.1.5.2 If adverse weather conditions are the basis for a Claim for additional time, such Claim shall be documented by data substantiating that weather conditions were abnormal for the period of time, could not have been reasonably anticipated and had an adverse effect on the scheduled construction.

§ 15.1.6 CLAIMS FOR CONSEQUENTIAL DAMAGES

The Contractor and Owner waive Claims against each other for consequential damages arising out of or relating to this Contract. This mutual waiver includes

- .1 damages incurred by the Owner for rental expenses, for losses of use, income, profit, financing, business and reputation, and for loss of management or employee productivity or of the services of such persons; and
- .2 damages incurred by the Contractor for principal office expenses including the compensation of personnel stationed there, for losses of financing, business and reputation, and for loss of profit except anticipated profit arising directly from the Work.

This mutual waiver is applicable, without limitation, to all consequential damages due to either party's termination in accordance with Article 14. Nothing contained in this Section 15.1.6 shall be deemed to preclude an award of liquidated damages, when applicable, in accordance with the requirements of the Contract Documents.

§ 15.2 INITIAL DECISION

§ 15.2.1 Decision of Owner. Claims, excluding those arising under Sections 10.3, 10.4, 11.3.9, and 11.3.10, shall be referred to the Initial Decision Maker for initial decision-evaluation and recommendation. The Architect will serve as the Initial Decision Maker, unless otherwise indicated in the Agreement. Except for those Claims excluded by this Section 15.2.1, ~~an initial decision-a final decision by the Owner~~ shall be required as a condition precedent to ~~mediation of any Claim-litigation of all Claims between the Contractor and Owner~~ arising prior to the date final payment is due, unless 30 days have passed after the Claim has been referred to the ~~Initial Decision Maker Architect~~ with no decision having been ~~rendered-rendered by the Owner.~~ Unless the Initial Decision Maker and all affected parties agree, the Initial Decision Maker will not ~~decide-evaluate~~ disputes between the Contractor and persons or entities other than the Owner.

§ 15.2.2 The ~~Initial Decision Maker-Architect~~ will review Claims and within ten days of the receipt of ~~a-the~~ Claim take one or more of the following actions: (1) request additional supporting data from the claimant or a response with supporting data from the other party, (2) ~~reject-recommend rejection of~~ the Claim in whole or in part, (3) ~~approve-recommend approval of~~ the Claim, (4) ~~suggest-recommend~~ a compromise, or (5) advise the parties that the Initial Decision Maker is unable to resolve the Claim if the Initial Decision Maker lacks sufficient information to

evaluate the merits of the Claim or if the Initial Decision Maker concludes that, in the Initial Decision Maker's sole discretion, it would be inappropriate for the Initial Decision Maker to resolve the Claim.

§ 15.2.3 In evaluating Claims, the Initial Decision Maker may, but shall not be obligated to, consult with or seek information from either party or from persons with special knowledge or expertise who may assist the Initial Decision Maker in rendering a decision. The Initial Decision Maker may request the Owner to authorize retention of such persons at the Owner's expense.

§ 15.2.4 If the Initial Decision Maker requests a party to provide a response to a Claim or to furnish additional supporting data, such party shall respond, within ten days after receipt of such request, and shall either (1) provide a response on the requested supporting data, (2) advise the Initial Decision Maker when the response or supporting data will be furnished or (3) advise the Initial Decision Maker that no supporting data will be furnished. Upon receipt of the response or supporting data, if any, the Initial Decision Maker will ~~either reject or approve~~ recommend ~~either rejection or approval of the Claim in whole or in part.~~

§ 15.2.5 The Initial Decision Maker will ~~render an initial decision~~ recommend approving or rejecting the Claim, or indicating that the Initial Decision Maker is unable to resolve the Claim. This initial decision shall (1) be in writing; (2) state the reasons therefor; and (3) notify the parties and the Architect, if the Architect is not serving as the Initial Decision Maker, of any change in the Contract Sum or Contract Time or both. The ~~initial Owner's decision~~ shall be final and binding on the parties but subject to mediation and, if the parties fail to resolve their dispute through mediation, to binding dispute resolution subject to mediation or arbitration.

~~§ 15.2.6 Either party may file for mediation of an initial decision at any time, subject to the terms of Section 15.2.6.1.~~

~~§ 15.2.6.1 Either party may, within 30 days from the date of an initial decision, demand in writing that the other party file for mediation within 60 days of the initial decision. If such a demand is made and the party receiving the demand fails to file for mediation within the time required, then both parties waive their rights to mediate or pursue binding dispute resolution proceedings with respect to the initial decision.~~

§ 15.2.6. Intentionally Omitted

§ 15.2.6.1. Intentionally Omitted.

§ 15.2.7 In the event of a Claim against the Contractor, the Owner may, but is not obligated to, notify the surety, if any, of the nature and amount of the Claim. If the Claim relates to a possibility of a Contractor's default, the Owner may, but is not obligated to, notify the surety and request the surety's assistance in resolving the controversy.

§ 15.2.8 If a Claim relates to or is the subject of a mechanic's lien, the party asserting such Claim may proceed in accordance with applicable law to comply with the lien notice or filing deadlines.

§ 15.3 MEDIATION

~~§ 15.3.1 Claims, disputes, or other matters in controversy arising out of or related to the Contract except those waived as provided for in Sections 9.10.4, 9.10.5, and 15.1.6 shall be subject to mediation as a condition precedent to binding dispute resolution.~~

~~§ 15.3.2 The parties shall endeavor to resolve their Claims by mediation which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Mediation Procedures in effect on the date of the Agreement. A request for mediation shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the mediation. The request may be made concurrently with the filing of binding dispute resolution proceedings but, in such event, mediation shall proceed in advance of binding dispute resolution proceedings, which shall be stayed pending mediation for a period of 60 days from the date of filing, unless stayed for a longer period by agreement of the parties or court order. If an arbitration is stayed pursuant to this Section 15.3.2, the parties may nonetheless proceed to the selection of the arbitrator(s) and agree upon a schedule for later proceedings.~~

~~§ 15.3.3 The parties shall share the mediator's fee and any filing fees equally. The mediation shall be held in the place where the Project is located, unless another location is mutually agreed upon. Agreements reached in mediation shall be enforceable as settlement agreements in any court having jurisdiction thereof.~~

~~§ 15.3.1. Intentionally Omitted.~~

~~§ 15.3.2... Intentionally Omitted.~~

~~§ 15.3.3... Intentionally Omitted.~~

~~§ 15.4 ARBITRATION~~

~~§ 15.4.1 If the parties have selected arbitration as the method for binding dispute resolution in the Agreement, any Claim subject to, but not resolved by, mediation shall be subject to arbitration which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Arbitration Rules in effect on the date of the Agreement. A demand for arbitration shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the arbitration. The party filing a notice of demand for arbitration must assert in the demand all Claims then known to that party on which arbitration is permitted to be demanded.~~

~~§ 15.4.1.1 A demand for arbitration shall be made no earlier than concurrently with the filing of a request for mediation, but in no event shall it be made after the date when the institution of legal or equitable proceedings based on the Claim would be barred by the applicable statute of limitations. For statute of limitations purposes, receipt of a written demand for arbitration by the person or entity administering the arbitration shall constitute the institution of legal or equitable proceedings based on the Claim.~~

~~§ 15.4.2 The award rendered by the arbitrator or arbitrators shall be final, and judgment may be entered upon it in accordance with applicable law in any court having jurisdiction thereof.~~

~~§ 15.4.3 The foregoing agreement to arbitrate and other agreements to arbitrate with an additional person or entity duly consented to by parties to the Agreement shall be specifically enforceable under applicable law in any court having jurisdiction thereof.~~

~~§ 15.4.1... Intentionally Omitted.~~

~~§ 15.4.1.1... Intentionally Omitted.~~

~~§ 15.4.2. Intentionally Omitted.~~

~~§ 15.4.3. Intentionally Omitted.~~

~~§ 15.4.4 CONSOLIDATION OR JOINDER~~

~~§ 15.4.4.1 Either party, at its sole discretion, may consolidate an arbitration conducted under this Agreement with any other arbitration to which it is a party provided that (1) the arbitration agreement governing the other arbitration permits consolidation, (2) the arbitrations to be consolidated substantially involve common questions of law or fact, and (3) the arbitrations employ materially similar procedural rules and methods for selecting arbitrator(s).~~

~~§ 15.4.4.2 Either party, at its sole discretion, may include by joinder persons or entities substantially involved in a common question of law or fact whose presence is required if complete relief is to be accorded in arbitration, provided that the party sought to be joined consents in writing to such joinder. Consent to arbitration involving an additional person or entity shall not constitute consent to arbitration of any claim, dispute or other matter in question not described in the written consent.~~

~~§ 15.4.4.1. Intentionally Omitted.~~

~~§ 15.4.4.2... Intentionally Omitted.~~

~~§ 15.4.4.3. Intentionally Omitted.~~

PART II

1. SCHEDULES AND REPORTS

Contractor shall submit for approval the following items in four (4) copies prior to commencing the Work:

a. A complete, detailed construction progress schedule in weekly increments, showing anticipated start and completion of all sections of the Work. Also, see sections 3.10 and 3.10.1

b. A complete list of Subcontractors

c. A breakdown of the Project contract price for use in processing monthly requisitions.

d. A projection of contract's monthly cash flow requirements for the duration of the Project.

e. The above requirements may be waived for small projects at the discretion of the Engineer.

2. MINORITY PARTICIPATION

The Contractor shall notify the City in writing of the names of any minority and disadvantaged business subcontractors to be used on the Project, including the estimated dollar amount of such subcontract and the minority classification of such subcontractors. A minority and disadvantaged business is one that is at least 51% owned by an Asian American, Black, Hispanic, and American Indian, Eskimo, Aleut, or Female.

3. EROSION & SEDIMENT CONTROL

On construction projects that are required by the City's Erosion & Sediment Control ordinance (City Code Chapter 15) to have an approved erosion and sediment control plan, the Contractor shall be required to implement the approved plan and comply with all conditions of the plan. A copy of the approved plan and the Virginia Erosion and Sediment Control Handbook. (Third Edition, 1992) shall be kept at the City. If the Contractor determines that the approved plan cannot be effectively carried out, the Contractor shall be responsible for notifying the plan approving authority and requesting a plan amendment as provided for in the Virginia Erosion and Sediment Control Law (Code of Virginia Title 10.1, Chapter 5, Article 4, Section 10.1-563C).

4. RIGHT TO AUDIT

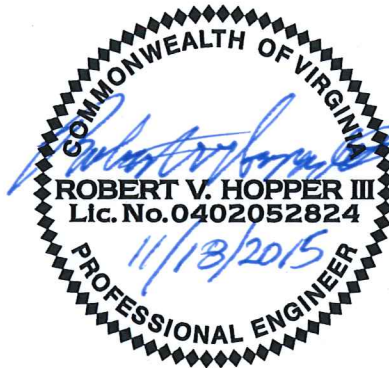
For cost-reimbursement contracts, change orders issued for fixed priced contracts or other contracts in excess of \$30,000, which include the provisions of services, the Contractor shall retain all books, records and other documents relative to this Contract for five (5) years after final payment or until audited by the Office of the City Auditors shall have full access to and the right to examine and duplicate any of said materials during said period.


~~§ 15.4.4.3 The Owner and Contractor grant to any person or entity made a party to an arbitration conducted under this Section 15.4, whether by joinder or consolidation, the same rights of joinder and consolidation as the Owner and Contractor under this Agreement.~~

SECTION 00002 - CERTIFICATION

I hereby certify that the specifications contained herein and the accompanying plans were prepared by me or under my direct supervision.

SIGNED, SEALED, AND DATED THIS 18th Day of NOVEMBER, 2015



By: 
Robert V. Hopper III, P.E.
CDM Smith

Project Name: Parkdale Channel Improvements Project - WO18
Project Number: 15-0011



CDM Smith, Inc.
5700 Thurston Avenue, Suite 102
Virginia Beach, Virginia 23455
Tel: (757) 318-9800

SECTION 01010

SUMMARY OF WORK

PART 1 GENERAL

1.01 GENERAL

- A. The Work of this Contract is generally described herein and further specified in following individual sections. The Drawings include information about the existing and proposed stream channels and pipe replacements.
- B. The Contractor shall perform the Work complete, in place, and ready for continuous service, and shall include repairs, replacements and restoration required as a result of damages caused during this construction.
- C. The Contractor shall furnish and install all materials which are reasonably and properly inferable and necessary for the proper completion of the Work, whether specifically indicated in the Contract Documents or not.
- D. The Contractor shall comply with all municipal, state, federal, and other codes which are applicable to the proposed construction work.
- E. The Contractor must maintain drainage services at all times.
- F. Excavations shall not remain open for more than 24 hours, without the permission of the Engineer.

1.02 LOCATION OF WORK

- A. The work of this project is located in the channel and floodplain at the stream running parallel to Parkdale Drive. The project area is on City of Norfolk property or within existing drainage, roadway, and/or temporary construction easements within the City of Norfolk, Virginia as shown on the drawings.

1.03 SCOPE OF WORK

- A. The Contractor shall furnish all labor, materials, equipment, tools, services, supervision and incidentals required to complete the work as shown on the Drawings and specified herein.

B. The Work includes, but is not necessarily limited to, the following:

1. Selective Clearing, Grubbing, and Pruning
2. Installation of Temporary Access Road
3. Removal of Fence, Retaining Wall Structures, and Concrete Pad
4. Construction Staking
5. Extension of Drainage Piping
6. Erosion and Sedimentation Control
7. Baseflow Bypass Pump Around
8. Installation of In-stream Log Structures
9. Site Grading Including Stream Channel Grading
10. Natural Fiber Erosion Control Matting
11. Modifications to RCP Stormwater Pipe
12. Replacement and Installation of Chainlink and Wood Board Fence
13. Site Plantings and Seeding
14. Conservation Signs
15. Curb Replacement at Temporary Construction Access
16. Traffic Control

1.04WORK SEQUENCE

- A. Perform work to ensure completion of the work in the Contract Time. Completion dates of the various stages shall be in accordance with the concurred construction schedule submitted by the Contractor.
- B. Substantial Completion: To satisfy the definition of substantial completion, the stream channel shall be complete including all re-grading, structure, and plantings. In addition to the stream channel itself, all stormwater piping, culverts, and appurtenances conveying stormwater into the stream shall be constructed complete, field tested as required by the Contract and ready for use, subject to Engineer's approval.
- C. Final Completion: The last stage of construction shall be vegetation maintenance and shall include the vegetation warranty period subject to Engineer's approval as well as all items listed in Section 01700, Contract Closeout.

1.05CONSTRUCTION AREAS

- A. Contractor shall limit his use of the construction areas for work and for storage to allow for minimal disturbance to residential properties.
- B. Assume full responsibility for the protection and safekeeping of products under this Contract, stored on the site.
- C. Obtain and pay for the use of additional storage or work areas needed for operations.
- D. Contractor shall at all times conduct his operations as to ensure the least inconvenience to the general public.

1.06 ABBREVIATIONS AND REFERENCES

- A. Whenever reference is made to the furnishing of materials or testing thereof to conform to the standards of any technical society, organization or body, it shall be construed to mean the latest standard code, specification or tentative specification adopted and published at the date of

advertisement for bids, even though reference has been made to an earlier standard. The following list of specifications is hereby made a part of the contract the same as if herein repeated in full. In the event of any conflict between any of these specifications, standards, codes or tentative specifications, and the Specifications, the latter shall govern. In the event that one of the following conflicts with another, the decision as to which shall govern will be decided by the Engineer, whose judgment will be final.

- B. Reference to a technical society, organization, or body may be made in the Specifications by abbreviations, in accordance with the following list:

AASHTO	-	The American Association of State Highway and Transportation Officials
ACI	-	American Concrete Institute
AGA	-	American Gas Association
ANSI	-	American National Standards Institute
ASCE	-	American Society of Civil Engineers
ASTM	-	American Society of Testing Materials
AWPA	-	American Wood Preservers Association
AWWA	-	American Water Works Association
DOT	-	Department of Transportation
EPA	-	Environmental Protection Agency
FED.SPEC	-	Federal Specifications
OSHA	-	Occupational Health and Safety Act
NAVY SPEC.	-	Navy Department Specification
VDEQ	-	Virginia Department of Environmental Quality
VDOT	-	Virginia Department of Transportation
VESCL	-	Virginia Erosion and Sediment Control Law
VESCR	-	Virginia Erosion and Sediment Control Regulations
NFPA	-	National Fire Protection Association
NLMA	-	National Lumber Manufacturers Association
U.L, Inc.	-	Underwriter's Laboratories, Inc.

- C. When no reference is made to a code, standard, or specification, the standard specifications of the ASTM, the ANSI, the ASME, the IEEE, or the NEMA shall govern.

1.07 PLANS AND SPECIFICATIONS

A. Specifications

The Technical Specifications consist of three parts: General, Products and Execution. The General Section contains General Requirements, which govern the work. Products and Execution modify and supplement these detailed requirements of the work and shall always govern whenever there appears to be a conflict.

B. Intent

All work called for in the Specifications applicable to this Contract, but not shown on the Plans in their present form, or vice versa, shall be of like effect as if shown or mentioned in both. Work not specified in either the Plans or the Specifications, but involved in carrying out their intent or in the complete and proper execution of the work, is required and shall be performed by the Contractor as though it were specifically delineated or described.

The apparent silence of the Specifications as to any detail, or the apparent omission from them of a detailed description, concerning any work to be done and materials to be furnished, shall be regarded as meaning that only the best general practices are to prevail and that only material

and workmanship of the best quality is to be used, and the interpretation of these specifications shall be made upon that basis.

The inclusion of the General Requirements (or work specified elsewhere) in the General part of the Specifications is only for the convenience of the Contractor and shall not be interpreted as a complete list of related Specification Sections.

PART 2 PRODUCTS (Not Used)

PART 3 EXECUTION (Not Used)

END OF SECTION

SECTION 01015

CONTROL OF WORK

PART 1 GENERAL

1.01 PUBLIC NOTIFICATION

- A. The Contractor shall prepare a form letter to be submitted and approved by the Engineer prior to distribution, and hand deliver the letter or mail the letter at the Contractor's expense, as directed by the Engineer, to all residences and businesses within the project area 2 days prior to the start of any work performed enclosing a copy of his proposed schedule indicating when work will begin in each area. Any deviations to this schedule must be approved by the Engineer and if the changes are deemed significant, the Engineer shall request that the Contractor, re-issue a notification letter to all residences, property owners, and businesses affected by the change at no additional cost to the City. An emergency telephone number shall be included in the form letter for contacting the Contractor's project manager and superintendent at all times. Two weeks before the start of work in each area the Contractor shall place a notice at the front door of each residence in that area advising the homeowners of the current schedule and again advising of the Contractor's emergency telephone number. The Contractor shall coordinate and cooperate with the Engineer on the most appropriate way to notify businesses in the area. The text of the notices shall be approved by the Engineer.

1.02 CONTRACTOR'S RESPONSIBILITY TO SUPPLY MATERIALS AND PERFORM WORK AT HIS EXPENSE

- A. An attempt has been made while writing this Specification to state the Contractor's responsibilities for supplying materials and performing work under this Contract. All supply of materials and performance of work stated or implied to be the Contractor's responsibility shall be supplied and/or performed by the Contractor and all costs in connection therewith shall be included in the unit and/or lump sum prices established under the items in the Bid Schedule of Prices.

1.03 COOPERATION WITHIN THIS CONTRACT

- A. All firms or persons authorized to perform any work under this Contract shall operate with the Contractor and his subcontractors or trades, and shall assist in incorporating the work of other trades where necessary or required.

1.04 SAFETY

- A. Accident prevention: Precautions shall be exercised at all times for the protection of persons and property. The safety provisions of applicable laws, building and construction codes shall be observed. The Contractor shall comply with the U.S. Department of Labor Safety and Health Regulations for construction promulgated under the Occupational Safety and Health Act of 1970 (PL 91-596), and under Section 107 of the contract Work Hours and Safety Standards Act (PL-54), except where state and local safety standards exceed the federal requirements and except where state safety standards have been approved by the Secretary of Labor in accordance with provisions of the Occupational Safety and Health Act.

- B. First aid: The Contractor shall keep on-site, at each work location, a completely equipped first aid kit and shall provide ready access thereto at all times when people are employed on the work.

1.05 LINES AND GRADES

- A. Grade: All work under this Contract shall be constructed in accordance with the lines and grades shown on the Plans, or as approved by the Engineer. The full responsibility for keeping alignment and grade shall rest upon the Contractor.
- B. Safeguarding Marks
 - 1. The Contractor shall safeguard all points, stakes, grade marks, monuments and bench marks made or established on the work, bear the cost of reestablishing them if disturbed, and bear the entire expense of rectifying work improperly installed due to not maintaining or protecting or to removing without authorization such established points, stakes and marks.
 - 2. The Contractor shall safeguard all existing and known property corners, monuments and marks adjacent to but not related to the work and, if required, shall bear the cost of reestablishing them if disturbed or destroyed.

1.06 PRIVATE LAND

- A. The Contractor shall not enter or occupy private land outside of easements, except by written permission of the property owner and Engineer's approval.

1.07 CARE AND PROTECTION OF PROPERTY

- A. The Contractor shall be responsible for the preservation of all public and private property, and shall use every precaution necessary to prevent damage thereto. If any direct or indirect damage is done to public or private property by or on account of any act, omission, neglect, or misconduct in the execution of the work on the part of the Contractor, such property shall be restored by the Contractor. Property restoration shall be at the Contractor's expense and restored to a condition equal to that existing before the damage was done, or the Contractor shall make good the damage in other manner acceptable to the Engineer.
- B. Along the location of the work all fences, walks, and other physical features shall be protected and restored by the Contractor. Fences and other features damaged or removed by the Contractor shall be replaced or repaired by the Contractor in the location indicated by the Engineer as soon as conditions permit. The manner in which the fence is repaired or replaced and the materials used in such work shall be subject to the approval of the Engineer. Private fences removed from within the right-of-way shall be replaced as described above at the right-of-way line.
- C. Protection of Trees
 - 1. Trees to be protected are identified on the Contract Drawings and shall be protected in accordance with State and Local regulations. Contractor shall protect other trees as directed by the Engineer.

2. Plant protective fencing shall be installed prior to beginning any construction on this project. Plant protective fencing shall be constructed at the locations as directed by the Engineer and in accordance with City and State specifications. The fencing shall be maintained in place until all construction operations in that particular area are complete. At completion, only light grading equipment such as small agricultural tractors shall be allowed on the plants' roots. Fill dirt no deeper than two inches shall be allowed under the limb spread of any plant.
 3. No building materials, dirt, or equipment shall be stored inside the protective fencing. Plants that die as a result of the Contractor's negligence shall be removed and replaced as directed by the Engineer at the Contractor's expense. The new plant shall be guaranteed for a year, planted in the proper season, and planted with approved arboricultural specifications.
 4. The Contractor shall trim all branches that are liable to be damaged because of his operations, but in no case shall any tree be cut or removed without prior notification of the Engineer. All injuries to bark, trunk, limbs, and roots of trees shall be repaired by dressing, cutting, and painting according to approved methods, using only approved tools and materials.
 5. Beneath trees or other surface structures, where possible, pipes and culverts may be built in short tunnels, backfilled with excavated materials, except as otherwise specified, or the trees or structures carefully supported and protected from damage.
- D. The protection, removal, and replacement of existing physical features along the line of work shall be a part of the work under the Contract, and all costs in connection therewith shall be included in the unit and/or lump sum prices established under the items in the Bid Schedule of Prices.

1.08 ACCESS TO PUBLIC SERVICES

- A. Neither the materials excavated nor the materials used in the construction of the work shall be so placed as to prevent free access to all fire hydrants, valves or manholes, or access required by emergency vehicles and/or personnel.

1.09 MAINTENANCE OF FLOW

- A. The Contractor shall at his own cost, provide for the flow of sewers, drains, and watercourses interrupted during the progress of the work, and shall immediately cart away and remove all offensive matter. The entire procedure of maintaining existing flow shall be fully discussed with the Engineer well in advance of the interruption of any flow. See Section 01510 for additional requirements relative to maintaining stream, stormwater and sanitary sewer flow.
- B. The Contractor shall be responsible for reporting and cleanup of any spills that occur at no additional cost to the City.

1.10 MAINTENANCE OF TRAFFIC

- A. The Contractor shall adhere to the approved traffic control plan. Any deviation of the approved plan shall be submitted and approved by the Engineer before the amended traffic control method is in place. The design and work associated with the amended traffic control plan shall be completed by the Contractor at no additional cost to the City.

- B. Unless permission to close a road is received in writing from the Engineer, all excavated material shall be placed so that vehicular and pedestrian traffic may be maintained at all times. If the Contractor's operations cause traffic hazards, he shall repair the road surface, provide temporary ways, erect wheel guards or fences, or take other measures for safety satisfactory to the Engineer. The Contractor is in no way relieved of liability for maintaining safe conditions regardless of approval of work by others.
- C. Detours around construction will be subject to the approval of the Engineer. Where detours are permitted, the Contractor shall provide all necessary barricades and signs as required to divert the flow of traffic. While traffic is detoured, the Contractor shall expedite construction operations, and periods when traffic is being detoured will be strictly controlled by the City. The Contractor is in no way relieved of liability for maintaining safe conditions because detours are approved by others.
- D. The Contractor shall take precautions to prevent injury to the public due to open trenches. At the Contractor's expense, police protection may be required for traffic control while work is in progress. The Contractor shall be fully responsible for damage or injuries whether or not police protection has been provided.
- E. Signs and signing procedures in roads shall conform fully to all applicable Federal, State, and Local codes.
- F. During construction and any subsequent maintenance within road rights-of-way, proper signs, signal lights, flagmen, and other warning devices for the protection of traffic shall be in conformance with the latest Manual on Uniform Traffic Control Devices. Information as to the above may be obtained from VDOT Division Engineers. The Engineer or their representatives reserves the right to stop any work for non-compliance. All traffic maintenance and construction procedures in State road rights-of-way shall conform to those specified within the latest revision of Policies and Procedures for Accommodating Utilities on Highway Rights-of-Way by the VDOT Division of Highways.

1.11 PROTECTION AND RELOCATION OF EXISTING STRUCTURES AND UTILITIES

- A. The Contractor shall assume full responsibility for the protection of all buildings, structures, and utilities, public or private, including poles, signs, services to buildings, utilities in the street, gas pipes, water pipes, hydrants, sewers, drains, and electric and telephone cables, whether or not they are shown on the Drawings. The Contractor shall carefully support and protect all such structures and utilities from injury of any kind. Any damage resulting from the Contractor's operations shall be repaired at no additional cost to the City.
- B. Protection and temporary removal and replacement of existing utilities and structures as described in this section shall be a part of the work under the Contract and all costs in connection therewith shall be included in the lump sum or unit prices established in the Bid Schedule of Prices.
- C. Contractor shall, before starting operations, make an examination of the interior and exterior of the adjacent structures, buildings, facilities, etc., and record by notes, measurements, photographs, etc., conditions which might be aggravated by open excavation and construction. Repairs or replacement of all conditions disturbed by the construction shall be made to the satisfaction of the Engineer. This does not preclude conforming to the requirements of the

insurance underwriters. Copies of surveys, photographs, reports, etc., shall be submitted to the Engineer.

- D. Prior to beginning any excavations the Contractor shall advise the Engineer of all buildings or structures on which he intends to perform work or which performance of the project work will affect.
- E. If, in the opinion of the Engineer, permanent or temporary relocation of a utility owned by the City is required and the relocation is not already noted on the Drawings, the Engineer may direct the Contractor in writing, to perform the work. Work so ordered will be paid for at the Contract unit prices, if applicable. If relocation of a privately owned utility is required, the Contractor will notify the Utility to perform the work as expeditiously as possible. The Contractor shall fully cooperate with the Engineer and Utility, and shall have no claim for delay due to such relocation. The Contractor shall notify public and private utility companies in writing at least 48 hours (excluding Saturdays, Sundays, and legal holidays) before excavating in any public way.
- F. Temporary fences: If, during the course of the work, it is necessary to remove or disturb any fence or part thereof, the Contractor shall, if so required by the Engineer, provide a suitable temporary fence which shall be maintained until the permanent fence is replaced. The Engineer shall be solely responsible for the determination of the necessity for providing a temporary fence and the type of temporary fence to be used.

1.12 PIPE AND CULVERT LOCATIONS

- A. Pipes and culverts shall be located substantially as indicated on the Drawings, but the Engineer reserves the right to make such modifications in locations as may be found desirable to avoid interference with existing structures or for other reasons.
- B. When necessary to notify the property owner or tenant of any impact of construction activity, entry onto the land shall only be made by a Foreman, or more senior person, of the Contractor. All Foreman, and those ranking above Foreman, shall carry laminated photo identification cards bearing their name, position, Contractor name, and local day time and after hours phone number of the Contractor. This identification shall be produced, whether or not requested, anytime a Foreman or more senior person enters private land to communicate with the property owner or tenant.

1.13 TEST PITS

- A. Test pits for the purpose of locating all known and unknown underground utilities or structures in advance of the construction shall be excavated and backfilled by the Contractor so as not to create a hazardous area. Test pits shall be backfilled immediately after their purpose has been satisfied and maintained in a manner satisfactory to the Engineer. The costs for such test pits shall be borne by the Contractor.

1.14 WATER FOR CONSTRUCTION PURPOSES

- A. In locations where public water supply is available, the Contractor may utilize the local public water supply to obtain water for construction purposes at the contractor's expense.
- B. The Contractor shall obtain prior approval from the Engineer before using the local public water supply and shall comply with all Federal, State, and local laws and regulations

concerning water drawn from a public water supply. Waste of water by the Contractor shall be sufficient cause for withdrawing the privilege of unrestricted water use. Hydrants shall only be operated under the supervision of the City's personnel.

- C. All water drawn from a public water supply shall be metered using a water meter/backflow preventer supplied by the City.

1.15 OPEN EXCAVATIONS

- A. All open excavations shall be adequately safeguarded by providing temporary barricades, caution signs, lights and other means to prevent accidents to persons, and damage to property. The Contractor, shall, at his own expense, provide suitable and safe bridges and other crossings for accommodating travel by pedestrians and workmen. Bridges provided for access to private property during construction shall be removed when no longer required. The length of open trench will be controlled by the particular surrounding conditions, but shall always be confined to the limits prescribed by the Engineer. If the excavation becomes a hazard, or if it excessively restricts traffic at any point, the Engineer may require special construction procedures such as limiting the length of open trench and prohibiting stacking excavated material in the street. All open excavations within road rights-of-way shall not remain open overnight.

At the discretion of the Engineer, excavation in other areas shall be closed at the end of each workday. If excavation is to remain open over night, use signage and chain link fence or Jersey barriers to enclose trench area. Other methods to enclose work area shall be approved by Engineer.

- B. The Contractor shall take precautions to prevent injury to the public due to open trenches. All trenches, excavated material, equipment, or other obstacles which could be dangerous to the public shall be well lighted at night where such obstacles are readily accessible to the public.
- C. The maximum length of open trench shall be no more than 100 feet in roadways and 300 feet elsewhere unless written approval otherwise is obtained from the Engineer.

1.16 CLEANUP AND DISPOSAL OF EXCESS MATERIAL

- A. During the course of the work, the Contractor shall keep the site of operations in as clean and neat a condition as possible. The Contractor shall dispose of all residues resulting from the construction work and, at the conclusion of the work, shall remove and haul away any surplus excavation, broken pavement, lumber, equipment, temporary and any other refuse remaining from the construction operations and shall leave the entire site of the work in a neat and orderly condition.
- B. In order to prevent environmental pollution arising from the construction activities related to the performance of this Contract, the Contractor and his subcontractors shall comply with all applicable Federal, State and Local laws and regulations concerning waste material disposal, as well as the specific requirements stated in this Section and elsewhere in the Specifications.
- C. The Contractor is advised that the disposal of excess excavated material in wetlands, stream corridors and plains is strictly prohibited even if the permission of the property owner is obtained. Any violation of this restriction by the Contractor or any person employed by him, will be brought to the immediate attention of the responsible regulatory agencies, with a request that appropriate action be taken against the offending parties. Therefore, the

Contractor will be required to remove the material at his/her own expense and restore the area impacted.

D. Final Cleaning

1. At the conclusion of the work, equipment, tools, temporary structures and materials belonging to the Contractor shall be promptly taken away, and he shall remove and promptly dispose of all water, dirt, rubbish or any other foreign substances.
2. The Contractor shall thoroughly clean all piping and materials installed under this Contract prior to final inspection.

1.17 VDOT CONSTRUCTION CONDITIONS

- A. VDOT has specific requirements with regard to construction work within their rights-of-way. The Contractor shall inform himself of these requirements and shall strictly adhere to all applicable portions. Whenever there is a difference in the requirements of the VDOT and these Specifications, the more stringent shall apply.
- B. The Contractor shall take special care to avoid any unreasonable traffic conflicts including working within hours of the day or night agreeable to VDOT.

1.18 MISCELLANEOUS

A. Protection Against Siltation and Bank Erosion

1. The Contractor shall arrange operations to minimize siltation and bank erosion on construction sites and on existing or proposed watercourses and drainage ditches.
2. The Contractor, at his own expense, shall remove any siltation deposits and correct any erosion problems as determined by the Engineer which results from his construction operations.
3. The Contractor shall vacuum clean all new and existing storm drainage facilities and discharge points affected by construction prior to final acceptance by the City.

B. Use of Chemicals

1. All chemicals used during project construction or furnished for project operation, whether herbicide, pesticide, disinfectant, polymer, reactant, or of other classification, must show approval of either EPA or USDA for its intended use. Use of all such chemicals and disposal of residues shall be in strict conformance with instructions.

C. Cooperation with Other Contractors and Forces

1. During progress of work under this Contract, it may be necessary for other contractors and persons employed by the City to work in or about the site. The City reserves the right to put such other contractors to work and to afford such access to the site of the work to be performed hereunder at such times as the City deems proper. The Contractor shall not impede or interfere with the work of such other contractors engaged in or about the work and shall so arrange and conduct his work that such other contractors may complete their work at the earliest date possible.

PART 2: PRODUCTS (NOT USED)

PART 3: EXECUTION (NOT USED)

END OF SECTION

SECTION 01025

MEASUREMENT AND PAYMENT

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. All contract prices included in Proposal shall be full compensation for all labor, materials, tools, equipment, supervision and incidentals necessary to complete the Work, as shown on the Drawings and specified in the Contract Documents, to be performed under this Contract.
- B. The items listed below refer to and are the same pay items listed in the Bid Schedule of Prices. They constitute all of the pay items for the completion of the Work. No direct or separate payment shall be made for providing miscellaneous temporary or accessory works, services, layout surveys, job signs, sanitary requirements, testing, safety devices, water supplies, power, maintaining traffic and all traffic signs, maintaining mailboxes, removal of waste, watchmen, and all other requirements of the General Conditions and DIVISION 1 - GENERAL REQUIREMENTS. Compensation for all such services, equipment and materials shall be included in the prices stipulated for the lump sum and unit pay items listed herein.
- C. Each lump sum and unit bid price shall be deemed to include an amount considered by Contractor to be adequate to cover Contractor's overhead and profit for each separately identified item. Relocation of the fence as required during the course of the construction shall not be paid separately, and is included in the unit price.
- D. For lump sum bid items, payment shall be made based upon the work in-place per the schedule of values provided by the Contractor.
- E. For purposes of measurement and payment, the term surface area is defined as the horizontal surface measured from a certified survey. The unit price bid for all items measured in surface area shall account for any necessary slope adjustments.

1.02 PAY ITEMS

TOTAL BID - ITEMS 1 - 36

SITE PREPARATION AND DEMOLITION

- A. **Item 1** – Furnish, Install, Maintain and Remove Temporary Gravel Construction Entrance
 - 1. Measurement: The quantity to Furnish, Install, Maintain and Remove Temporary Gravel Construction Entrance to be paid for under this Item will be the lump sum of all required for construction entrance installation as shown on C-1 and verified by the Owner.
 - 2. Payment: The unit price bid for each gravel construction entrance shall be full compensation required to furnish, install, maintain and remove the gravel construction entrance as shown on the Drawings and as specified herein, including but not limited to: geotextile filter fabric; crushed stone; backfill and compaction; hauling and disposal of all discarded materials upon construction completion; and all else incidental thereto for which separate payment is not provided under other bid items.

B. **Item 2** – Construction Staking and Surveying

1. The lump sum price bid for Construction Staking and Surveying for this Item shall be on a prorated monthly basis based on the number of months for construction and shall be full compensation required to furnish all survey control for the work as required by the specifications including initial site layout and construction staking; control of work; certified as-builts; and all else incidental thereto for which separate payment is not provided under other items in the Bid Schedule of Prices.

C. **Item 3** – Furnish, Install, Maintain, and Remove Construction and Tree Protection Fencing

1. Measurement: The quantity to Furnish, Install, Maintain, and Remove Tree Protection Fencing to be paid for under this Item will be the actual number of linear feet installed as shown on C-2 and verified by the Owner.
2. Payment: The unit price bid for tree protection fencing shall be full compensation required to furnish, install, maintain and removal the fence as shown on the Drawings and as specified herein, including but not limited to: 4-foot-high orange barrier/safety fence; posts; braces; hardware; fence repairs; hauling and disposal of fence upon construction completion; repair of any damage to ground or vegetation; and all else incidental thereto for which separate payment is not provided under other bid items.

D. **Item 4** – Temporary Rock Check Dam

1. Measurement: The quantity to be paid for under this Item will be the actual number of Temporary Rock Check Dams installed as verified by the Owner.
2. Payment: The per unit price bid for this Item shall be full compensation required to furnish, install, and remove each temporary rock check dam structure as shown on the Drawings and as specified herein including but not limited to: salvaging or furnishing riprap furnishing geotextile fabric, hauling, labor, equipment, tools, incidentals, and materials.

E. **Item 5** – Furnish, Install, Maintain and Remove Sediment Fence

3. Measurement: The quantity to be paid for under this Item will be the actual number of linear feet of sediment fence installed as verified by the Owner.
4. Payment: The unit price bid for sediment fence shall be full compensation required to furnish, install, maintain and remove the fence as shown on the Drawings and as specified herein, including but not limited to: welded wire and fabric; posts; braces; hardware; inspection and maintenance of fence; removal, hauling and proper disposal of all sediment; hauling and proper disposal of sediment fence upon construction completion; and all else incidental thereto for which separate payment is not provided under other bid items.

F. **Item 6** – Furnish, Install, and Remove Baseflow Bypass and Dewatering Pumping System

1. The lump sum price bid to Furnish, Install, and Remove the Baseflow Bypass and Dewatering Pumping System to be paid under this Item as shown on C-1(plan) and C-

6(detail) will be full compensation for all labor, materials, tools, equipment, supervision and incidentals required to construct and remove the bypass pumping system including but not limited to: pumps, fuel and temporary piping; including backfill material; removal of bypass pumping system; and all else incidental thereto for which separate payment is not provided under other bid items.

G. **Item 7 – Clearing, Grubbing, and Tree Removal**

1. Measurement: The quantity for Clearing and Grubbing areas within limits of grading to be paid for under this Item will be the actual number of square yards of clearing and grubbing including tree removal as specified in Section 02100 completed within the grading limits as shown sheet C-1.
2. Payment: The unit price bid per square yard for this Item shall include removal of select trees and underbrush as well as all other grubbing debris including stumps and roots in areas requiring grading only to a minimum depth of 18 inches; proper disposal of the debris; and all else incidental thereto for which separate payment is not provided under other items in the Bid Schedule of Prices. No payment will be made for areas which have not been approved by the Owner.

H. **Item 8 – Demolition and Removal of Retaining Wall, Fence, and Miscellaneous Structures**

1. The lump sum price bid for Demolition and Removal of the retaining wall, fence, steps and miscellaneous structures as shown on C-1 to be paid under this Item shall be full compensation for all labor, materials, tools, equipment, supervision, and incidentals necessary for removal of the 3 foot tall retaining wall lining the drainage channel as specified herein including but not limited to: hauling and proper disposal of the wall and all excess materials; excavation, placement of suitable backfill and compaction; and all else incidental thereto for which separate payment is not provided under other bid items.

I. **Item 9 – Selective Tree Removal for Trees with Diameters Between 8” - 15”**

1. Measurement: The quantity to be paid for under this item will be the actual number of trees removed with diameters between 8” - 15” as verified by the Owner.
2. Payment: The unit price bid per tree for this Item will be full compensation required to perform selective tree removal as specified herein including but not limited to: cutting, removal of stump, grubbing, hauling and proper disposal of cleared material.

J. **Item 10 – Selective Tree Removal for Trees with Diameters Greater than 15”**

1. Measurement: The quantity to be paid for under this item will be the actual number of trees removed with diameters greater than 15” as verified by the Owner.
2. Payment: The unit price bid per tree for this Item will be full compensation required to perform selective tree removal as specified herein including but not limited to: cutting, removal of stump, grubbing, hauling and proper disposal of cleared material.

K. **Item 11** – Furnish and Install 4-inch Corrugated Polyethylene Pipe

1. Measurement: The quantity to Furnish and Install 4-inch corrugated polyethylene pipe to be paid for under this Item as shown on C-5 will be the actual number of linear feet of 4-inch Perforated PVC Pipe in place measured along the horizontal centerline of the installed pipe with no deduction for fittings. Measurement will be to the inside terminal wall of the structures and to the nearest whole foot.
2. Payment: The unit price bid per linear foot for this Item shall be full compensation to furnish and install 4-inch corrugated polyethylene pipe as shown on the Drawings and specified herein. Installation includes, but is not limited to: 4-inch Corrugated Polyethylene Pipe, fittings and gaskets; pipe sections; caps; varmint guard; stone splash pad and all else incidental thereto for which separate payment is not provided under other bid items.

L. **Item 12** – Replace Flared End Section

1. Measurement: The quantity to be paid for under this Item will be the actual number of Flared End Sections installed as verified by the Owner.
2. Payment: The per unit price bid for this Item shall be full compensation required to furnish and install each flared end section structure as shown on the Drawings and as specified herein including but not limited to: salvaging or furnishing flared end section, bedding, hauling, connection, labor, equipment, tools, incidentals, and materials.

M. **Item 13** – Remove and Relocate Riprap

1. Measurement: The quantity to Furnish and Install VDOT Class A Riprap Slope Protection to be paid for under this Item will be the square yards of VDOT Class A riprap salvaged and relocated or delivered and installed as shown on C-2 and specified herein.
2. Payment: The unit price bid per ton for this Item shall be full compensation for all labor, materials, tools, equipment, supervision and incidentals required to furnish and install VDOT Class A riprap underlain by bedding stone and geotextile fabric; including but not limited to: salvage and relocation or furnishing of riprap; geotextile fabric; VDOT No. 4 stone bedding; finish grading; and all other appurtenances for which payment is not provided under other bid items.

N. **Items 14** – General Excavation and Rough Grading

1. Measurement: The quantity for Stream Channel Excavation to be paid for under this Item as shown on C-2 will be the actual number of cubic yards measured in their original position and computed by comparing topographic surveys performed before and after excavation of material. The volume will be verified by the Owner.
2. Payment: The unit price bid per cubic yard for this item shall include temporary stockpiling of desired materials; temporary stockpile stabilization; formation and compaction of subgrades; on-site transport of materials and all else incidental thereto for which separate payment is not provided under other bid items.

O. **Item 15 – Salvage and Place Topsoil**

1. Measurement: The quantity for Salvaging and Placing Topsoil to be paid for under this Item will be the actual number of cubic yards placed to reach finished grade elevations as shown on C-2 measured by comparing topographic survey performed before and after placement of topsoil. The volume will be verified by the Owner.
2. Payment: The unit price bid per cubic yard for this Item shall include, furnishing, on-site/off-site hauling, placement and compaction of suitable fill; placement of salvaged stream bed materials; grading; and all else incidental thereto for which separate payment is not provided under other bid items.

P. **Item 16 – Stream Channel Fine Grading**

1. Measurement: The quantity for Stream Channel Backfill and Grading to be paid for under this Item will be the actual number of cubic yards backfilled and compacted to reach subgrade or finished grade elevations as shown on C-2 measured by comparing topographic survey performed before and after placement of fill material. The volume will be verified by the Owner.
3. Payment: The unit price bid per cubic yard for this Item shall include, furnishing, on-site/off-site hauling, placement and compaction of suitable fill; placement of salvaged stream bed materials; grading; and all else incidental thereto for which separate payment is not provided under other bid items.

Q. **Items 17 – Removal and Disposal of Excess Cut Materials**

1. Measurement: The quantity to be paid for under this Item will be the actual number of cubic yards measured in their original position and computed by comparing topographic surveys performed before and after excavation of material between. The volume will be verified by the Engineer.
2. Payment: The unit price bid per cubic yard for this Item shall include; drainage and dewatering of unclassified materials; removal and proper disposal of all excess materials; off-site transport of materials; and all else incidental thereto for which separate payment is not provided under other bid items.

R. **Item 18 – Install Log Vane Structures**

1. Measurement: The quantity to be paid for under this Item will be the actual number of Log Vane Structures installed as verified by the Owner.
2. Payment: The per unit price bid for this Item shall be full compensation required to furnish and install each log vane structure as shown on the Drawings and as specified herein including but not limited to: salvaging or furnishing header and footer logs, salvaging or furnishing boulders and gravel tailings, furnishing geotextile fabric, hauling, labor, equipment, tools, incidentals, and materials.

S. Item 19 – Furnish and Install Channel Bank Erosion Control Matting

1. Measurement: The quantity to Furnish and Install Channel Bank Erosion Control Matting to be paid for under this Item as shown on C-4 will be the actual number of square yards of channel bank erosion control matting in place as measured by determining the application area from as-built survey data and as accepted by the Engineer.
2. Payment: The unit price bid per square yard for this Item shall be full compensation required to furnish and install channel bank erosion control matting as specified herein for which payment is not provided under other items in the Bid Schedule of Prices.

T. Item 20 – Furnish and Install Plantings – Trees

1. Measurement: The quantity to Furnish and Plant to be paid for under this Item as shown on C-4 will be the actual number of trees, plants, and live stakes planted in place as accepted by the Owner.
2. Payment: The unit price bid per tree to Furnish and Plant Trees to be paid for under this Item shall be full compensation for all labor, materials, tools, equipment, supervision, and incidentals necessary to plant trees and shrubs as shown on the Drawings and as specified herein. Planting shall include, but not be limited to: excavation and backfill; watering; fertilizing; pruning; placement of mulch; maintenance; stabilization of trees, including wooden stakes, wire and rubber hose collars; and all else incidental thereto for which separate payment is not provided under other bid items.

U. Item 21 – Furnish and Install Plantings – Shrubs

1. Measurement: The quantity to Furnish and Plant to be paid for under this Item as shown on C-4 will be the actual number of trees, plants, and live stakes planted in place as accepted by the Owner.
2. Payment: The unit price bid per tree to Furnish and Plant Trees to be paid for under this Item shall be full compensation for all labor, materials, tools, equipment, supervision, and incidentals necessary to plant trees and shrubs as shown on the Drawings and as specified herein. Planting shall include, but not be limited to: excavation and backfill; watering; fertilizing; pruning; placement of mulch; maintenance; stabilization of trees, including wooden stakes, wire and rubber hose collars; and all else incidental thereto for which separate payment is not provided under other bid items.

V. Item 22 – Furnish and Install Plantings – Herbaceous

1. Measurement: The quantity to Furnish and Plant to be paid for under this Item as shown on C-4 will be the actual number of herbaceous plants, and live stakes planted in place as accepted by the Owner.
2. Payment: The unit price bid per tree to Furnish and Plant herbaceous specimens to be paid for under this Item shall be full compensation for all labor, materials, tools, equipment, supervision, and incidentals necessary to plant plants as shown on the Drawings and as specified herein. Planting shall include, but not be limited to: excavation and backfill; watering; fertilizing; pruning; placement of mulch; maintenance;

and all else incidental thereto for which separate payment is not provided under other bid items.

W. **Item 23** – Furnish and Install Temporary Seeding and Mulching

1. Measurement: The quantity to Furnish and Install Temporary Seeding and Mulching to be paid for under this Item will be based upon the actual in-place number of square yards as measured by computing the area of the temporary seeded and mulched area limits.
2. Payment: The unit price bid per square yard for this Item will be full compensation for furnishing and installing Temporary Seeding and Mulching, as specified herein for which payment is not provided under other items in the Bid Schedule of Prices. Temporary Seeding and Mulching shall only be conducted when permanent seeding and mulching cannot be performed due to seasonal constraints and upon approval by the Owner. No payment will be made for temporary seeded and mulched areas until the establishment of a sufficient growth of grass as examined and approved by the Owner.

X. **Item 24** – Furnish and Install Turf Grass Seeding and Mulching

1. Measurement: The quantity to Furnish and Install Turf Grass Seeding and Mulching to be paid for under this Item as shown on C-4 will be based upon the actual in-place number of square yards as measured by computing the area of the turf grass seeded and mulched area limits.
3. Payment: The unit price bid per square yard for this Item will be full compensation for furnishing and installing Turf Grass Seeding and Mulching, as specified herein for which payment is not provided under other items in the Bid Schedule of Prices. Turf Grass Seeding and Mulching shall only be conducted when can be performed within seasonal constraints and upon approval by the Owner. No payment will be made for turf grass seeded and mulched areas until the establishment of a sufficient growth of grass as examined and approved by the Owner.

U. **Item 25** – Furnish and Install Wetland Area Seeding and Mulching

1. Measurement: The quantity to Furnish and Install Wetland Seeding and Mulching to be paid for under this Item as shown on C-4 will be the actual number of square yards of permanent seeding and mulching in place as measured by determining the application area of the seed mixture from as-built survey data as required in Section 01050, and as accepted by the Owner.
2. Payment: The unit price bid per square yard for this Item shall be full compensation for all labor, materials, tools, equipment, supervision and incidentals required to furnish and install permanent seeding and mulching and the addition of soil amendments as specified herein for which payment is not provided under other bid items. No payment will be made for seeded and mulched areas until the establishment of a sufficient growth of grass as examined and approved by the Owner and certifying surveys required by Section 01050 have been submitted and approved by the Owner.

Z. Item 26 – Furnish and Install Riparian Seeding and Mulching

1. **Measurement:** The quantity to Furnish and Install Riparian Seeding and Mulching to be paid for under this Item as shown on C-5 will be the actual number of square yards of permanent seeding and mulching in place as measured by determining the application area of the seed mixture from as-built survey data as required in Section 01050, and as accepted by the Owner.
2. **Payment:** The unit price bid per square yard for this Item shall be full compensation for all labor, materials, tools, equipment, supervision and incidentals required to furnish and install permanent seeding and mulching and the addition of soil amendments as specified herein for which payment is not provided under other bid items. No payment will be made for seeded and mulched areas until the establishment of a sufficient growth as examined and approved by the Owner and certifying surveys required by Section 01050 have been submitted and approved by the Owner.

AA. Item 27 – Landscaping

1. **Measurement:** The quantity to conduct landscaping will be the actual number of square yards of landscaping in place as measured by determining the application area of the landscaping areas from as-built survey data as required in Section 01050, and as accepted by the Owner.
2. **Payment:** The unit price bid per square yard for this Item shall be full compensation for all labor, materials, plants, tools, equipment, supervision and incidentals required to furnish and install permanent plantings and mulching and the addition of soil amendments as specified herein for which payment is not provided under other bid items. No payment will be made for landscaped areas until the establishment of a sufficient growth as examined and approved by the Owner and certifying surveys required by Section 01050 have been submitted and approved by the Owner.

AB. Item 28 – Vegetation Maintenance and Warranty

1. The lump sum price bid for this Item shall be full compensation required to provide maintenance of all vegetated areas and invasive species management, including furnishing all materials, tools, labor, equipment, hauling, and any other appurtenances necessary to replace non-living or unhealthy plants, the removal of invasive vegetation and associated root systems, and all necessary herbicide application, for the period of time defined in the specifications and warranty all vegetated areas for a period as defined in the specifications.

AC. Item 29 – Relocate and Replace 6-foot-high Chain Link Fence

1. **Measurement:** The quantity to Furnish, and Install replacement 6-foot Chain Link Fence to be paid for under this Item will be the actual number of linear feet of 6-foot chain link fence replaced or installed as shown on C-2 and verified by the Owner.
2. **Payment:** The unit price bid for this Item shall be full compensation required to replace the fence as shown on the Drawings and as specified herein, including but not limited to: 4-foot-high chain link fence; gates; posts; braces; hardware; hauling and proper disposal of fence upon construction completion repair; repair of any damage to ground or vegetation; and all else incidental thereto for which separate payment is not provided

under other bid items. Relocation of the fence as required during the course of construction shall not be paid for separately, and is included in the unit price.

AD. Item 30 – Relocate and Replace 4-foot-high Wood Board Fence

1. Measurement: The quantity to Furnish and install new and replacement 4-foot Wood Fence to be paid for under this Item will be the actual number of linear feet of 4-foot chain link fence installed as shown on C-4 and verified by the Owner.
2. Payment: The unit price bid for this Item shall be full compensation required to replace the fence as shown on the Drawings and as specified herein, including but not limited to: 4-foot-high chain link fence; gates; posts; braces; hardware; hauling and proper disposal of fence upon construction completion repair; repair of any damage to ground or vegetation; and all else incidental thereto for which separate payment is not provided under other bid items. Relocation of the fence as required during the course of construction shall not be paid for separately, and is included in the unit price.

AE. Item 31 – Furnish and Install 4-foot-high Post and Chain Barrier

1. Measurement: The quantity to Furnish and Install 4-foot-high Post and Chain Barrier to be paid for under this Item will be the actual number of linear feet of 4-foot post and chain barrier installed as shown on C-4 and verified by the Owner.
2. Payment: The unit price bid for this Item shall be full compensation required to replace the fence as shown on the Drawings and as specified herein, including but not limited to: 4-foot-high post and chain barrier; posts; chain; braces; hardware; hauling and proper disposal of fence upon construction completion repair; repair of any damage to ground or vegetation; and all else incidental thereto for which separate payment is not provided under other bid items.

AF. Item 32 – Furnish and Install Planting Protection Signs

1. Measurement: The quantity to Furnish and Install Planting Protection Signs to be paid for under this Item will be the actual number of Planting Protection Signs installed as shown on C-4 and verified by the Owner.
2. Payment: The per unit price bid for this Item shall be full compensation required to furnish and install each planting protection sign structure as shown on the Drawings and as specified herein.

AG. Item 33 - Replace Existing Granite Curb

1. Measurement: The quantity to Replace Existing Granite Curb to be paid for under this Item will be the actual number of linear feet of concrete curb needed to replace any curb removed or damaged for temporary construction entrance to City standards.
2. Payment: The unit price bid per linear foot for this Item shall include replacing or furnishing and installing new or salvaged curb; and all else incidental thereto for which separate payment is not provided under other bid items.

AH. Item 34 – Miscellaneous Work and Clean-up

1. Payment for this Item will be made at the applicable lump sum amount as determined above at the lump sum price bid on the Bid Schedule of Prices. This price and payment shall be full compensation for all labor, materials, equipment and incidentals required to perform the work specified in Section 02901; construction scheduling; pre-construction videography/photography; project record documents as required by Section 01720; Quality Control Laboratory (QCL) testing; and any other miscellaneous work not specifically included for payment under any other item but obviously necessary to complete the work included in the Contract. Partial payments will be based on the breakdown of the item as required in Section 02901.

AI. Item 35 – Mobilization / Demobilization

1. Measurement: The quantity for Mobilization shall be for the entire work with labor, material, equipment, disposal fees and all appurtenances that are necessary for all work, in accordance with the plans and specifications.
2. Payment of this item will be made at the applicable lump sum amount in accordance with the requirements of the General Conditions. Mobilization/demobilization payments will be pro-rated on a monthly basis.

1.03 ALL OTHER WORK

- A. Labor, materials, equipment, and incidentals required to do work not specifically listed in the pay items, but obviously necessary for proper completion of the work as specified and indicated, will not be measured for payment. Payment for all such work shall be included in the prices bid for the pay items. No separate payment shall be made to the Contractor for this work.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01026

SCHEDULE OF VALUES

PART 1 GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Submit to the Engineer a Schedule of Values allocated to the various portions of the work as listed in the Bid Schedule of Prices (BSP) within 21 days after the effective date of the Agreement.
- B. Upon request of the Engineer, support the values with data, which will substantiate their correctness.
- C. The accepted Schedule of Values shall be used only as the basis for the Contractor's Applications for Payment.

1.02 RELATED REQUIREMENTS

- A. The Contract Documents include, but are not limited to the following related requirements:
 - 1. Bid Schedule of Prices
 - 2. General Conditions
 - 3. Project Special Provisions
 - 4. Section 01027: Application for Payment

1.03 FORM AND CONTENT OF SCHEDULE OF VALUES

- A. Type schedule on 8-1/2-in by 11-in white paper. Identify schedule with:
 - 1. Title of Project and location.
 - 2. Engineer and Project number.
 - 3. Name and Address of Contractor.
 - 4. Contract designation.
 - 5. Date of submission.
- B. Schedule shall list the installed value of the component parts of the Work in sufficient detail to serve as a basis for computing values for progress payments during construction. At a minimum the component parts listed in the bid form shall be used.
- C. Identify each line item with the number and title of the respective major section of the specifications.
- D. For each major line item list sub-values of major products or operations under the item.
- E. For the various portions of the Work:
 - 1. Each item shall include a directly proportional amount of the Contractor's overhead and profit.

2. For items on which progress payments will be requested for stored materials, break down the value into:
 - a. The cost of the materials, delivered and unloaded, with taxes paid. Paid invoices are required for materials upon request by the Engineer.
 - b. The total installed value.

F. The sum of all values listed in the schedule shall equal the total Contract Sum.

1.04 SUBSCHEDULE OF UNIT MATERIAL VALUES

A. Submit a sub-schedule of unit costs and quantities for:

1. Products on which progress payments will be requested for stored products.

B. The form of submittal shall parallel that of the Schedule of Values, with each item identified the same as the line item in the Schedule of Values.

C. The unit quantity for bulk materials shall include an allowance for normal waste.

D. The unit values for the materials shall be broken down into:

1. Cost of the material, delivered and unloaded at the site, with taxes paid.
2. Copies of invoices for component material shall be included with the payment request in which the material first appears.
3. Paid invoices shall be provided with the second payment request in which the material appears or no payment shall be allowed and/or may be deleted from the request.

E. The installed unit value multiplied by the quantity listed shall equal the cost of that item in the schedule of values.

F. The installed unit value multiplied by the quantity listed shall equal the cost of that item in the Schedule of Values.

PART 2 PRODUCTS (Not Used)

PART 3 EXECUTION (Not Used)

END OF SECTION

SECTION 01027

APPLICATIONS FOR PAYMENT

PART 1 GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Submit Applications for Payment to the Engineer in accordance with the schedule established by Conditions of the Contract and Agreement between the City and Contractor.
- B. The accepted Bid Schedule of Prices shall be used as the basis for the Contractor's Application for Payment.

1.02 RELATED WORK

- A. General Conditions
- B. Section 01025: Measurement and Payment
- C. Section 01050: Field Engineering
- D. Section 01380: Pre and Post-construction Video Photography and Photographs
- E. Section 01700: Contract Closeout
- F. Section 01720: Project Record Documents

1.03 SUBMITTALS

- A. Submit Applications for Payment in automated format approved by the Engineer, with itemized data typed on 8-1/2-in by 11-in white paper continuation sheets, set up in the same format as the approved Schedule of Values, providing complete documentation of all items for which payment is requested. Text and tabular data shall be in Microsoft Excel format.
- B. Contractor shall submit payment estimates in accordance with the requirements of the General Conditions of the Contract.

1.04 PREPARATION OF APPLICATION FOR EACH PROGRESS PAYMENT

- A. Application Form:
 - 1. Fill in required information, including that for Change Orders executed prior to date of submittal of application.
 - 2. Fill in summary of dollar values to agree with respective totals indicated on continuation sheets.
 - 3. Execute certification with signature of a responsible officer of Contract firm.
- B. Continuation Sheets:

1. Fill in total list of all scheduled component items of Work, with item number and scheduled dollar value for each item.
2. Fill in dollar value in each column for each scheduled line item when work has been performed or products stored.
3. List each Change Order executed prior to date of submission, at the end of the continuation sheets.
 - a. List by Change Order Number and description, as for an original component item of work.
4. To receive approval for payment on component material stored on site, submit copies of the original paid invoices with the application for payment.

1.05 SUBSTANTIATING DATA FOR PROGRESS PAYMENTS

- A. Contractor shall submit with each application for payment the following information:
 1. Project.
 2. Application number and date.
 3. Detailed list of enclosures.
- B. Submit one copy of data and cover letter for each copy of application.

1.06 PREPARATION OF APPLICATION FOR FINAL PAYMENT

- A. Fill in Application form as specified for progress payments.
- B. Use continuation sheet for presenting the final statement of accounting as specified in Section 01700 - Contract Closeout.
- C. Submit all Project Record Documents in accordance with Sections 01050 and 01720.

1.07 SUBMITTAL PROCEDURE

- A. Submit Applications for Payment to the Engineer at the times stipulated in the Agreement and with the information required by the City.
- B. Number: Four copies of each Application.
- C. When the Engineer finds Application properly completed and correct, he/she will process for payment.

PART 2 PRODUCTS (Not Used)

PART 3 EXECUTION (Not Used)

END OF SECTION

SECTION 01050

FIELD ENGINEERING

PART 1 GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Provide and pay for field engineering services required for Project.
 - 1. Survey work required in execution of Project.
 - 2. Civil, structural or other professional engineering services specified, or required to execute Contractor's construction methods.
- B. The Contractor shall retain the services of a professional land surveyor licensed in Virginia to:
 - 1. Identify existing control points and property line corner stakes indicated on the Drawings, as required.
 - 2. Verify all existing structure locations.
 - 3. Maintain an accurate location of all buried piping.
- C. The Engineer will provide AutoCAD files and standards for Record Drawings that are to be maintained by the Contractor. The Contractor will be required to sign and submit the AutoCAD Disclaimer Form at the end of this section before receiving the AutoCAD files.
- D. At Substantial Completion, submit certified drawings with complete AutoCAD files signed and sealed by a Virginia Professional Land Surveyor.

1.02 RELATED REQUIREMENTS

- A. Section 01010: Summary of Work.
- B. Section 01027: Applications for Payment.
- C. Section 01700: Contract Closeout.
- D. Section 01720: Project Record Documents.

1.03 SUBMITTALS

- A. Submit name and address of professional land surveyor or professional engineer to the Engineer.
- B. On request of the Engineer, submit documentation to verify accuracy of field engineering work.
- C. Submit certificate signed by professional engineer or land surveyor certifying that elevations and locations of improvements are in conformance, or non-conformance, with Contract Documents.
- D. At the end of the project, and prior to final payment, submit certified drawings (signed and sealed by the professional land surveyor) of the items listed below. These drawings shall be included with, and made a part of, the project record documents.

1. Certified site survey at same scale as Contract Drawings, on 24-in by 36-in sheets, indicating topography with 1 ft contours, centerline of stream, extent of grading, extent of boulder basin structures, riprap, in-stream structures, concrete structure inverts, sidewalks, and location of permanent bench marks.
2. Certified drawings showing the location, lines and grades of all buried piping and other buried facilities installed as a result of the work. This shall be at the same scale as the Engineer's drawings and submitted on 24-in by 36-in sheets.
3. Certified site survey of Upper Longview Lake area under drained conditions prior to removal of sediment at same scale as Contract Drawings, on 24-in by 36-in sheets, indicating topography with 1 ft contours.

E. The Contractor shall submit each survey along with an electronic version in AutoCAD format.

1.04 QUALIFICATIONS OF SURVEYOR OR ENGINEER

- A. Registered professional engineer or land surveyor of the discipline required for the specific service on the Project, currently licensed in Virginia.

1.05 SURVEY REFERENCE POINTS

- A. Existing basic horizontal and vertical control points for the Project are those designated on Drawings. Vertical control points shall be field verified prior to start of construction.
- B. Locate and protect control points prior to starting site work and preserve all permanent reference points during construction.
 1. Make no changes or relocations without prior written notice to the Engineer.
 2. Report to the Engineer when any reference point is lost or destroyed, or requires relocation because of necessary changes in grades or locations.
 3. Require surveyor to correctly replace project control points which may be lost or destroyed. Establish replacements based on original survey control.

1.06 PROJECT SURVEY REQUIREMENTS BY REGISTERED SURVEYOR

- A. Establish a minimum of six permanent bench marks on site as shown on plans transecting built stream channel, referenced to data established by survey control points. Record locations, with horizontal and vertical data, on Project Record Documents.
- B. Establish lines and levels, locate and lay out, by instrumentation and similar appropriate means:
 1. Site improvements
 - a. Stakes for grading, fill and topsoil placement.
 - b. Utility slopes and invert elevations.
 - c. Centerline of stream channel.
 - d. Stakes for in-stream structures.

- C. From time to time (no less frequently than monthly), verify layouts and lines, grade, locations of work in progress and certify such to Engineer.
- D. Establish all lines and grades and verify all existing utility locations prior to construction of line work for all buried piping and conduit at 100-ft increments and at defined breaks in grade.

1.07 RECORDS

- A. Maintain a complete, accurate log of all control and survey work as it progresses.
- B. Update the Project Record Drawings on a monthly basis based on the work performed during the month ending at the pay request as a condition for approval of monthly progress payment requests.
- C. Maintain an accurate record of all changes, revisions, and modifications.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

(FORM FOLLOWS)

AUTOCAD DISK COPY
DISCLAIMER

As an accommodation to _____ (Contractor), City agrees to provide Contractor an electronic copy of the AutoCAD disk(s) used to develop the Conformed Contract Drawings (Drawing Nos. ____ through ____) for the Parkdale Channel Improvement Project. The information contained may include all or a portion of the information which is shown on the Conformed Contract Drawings. By accepting the disk(s), Contractor acknowledges the potential errors that may arise through the electronic copying of AutoCAD disk(s).

The AutoCAD disk(s) is/are provided to Contractor "AS IS" and Contractor may use the AutoCAD disk(s) solely for the purpose of maintaining record drawings for the construction of the Longview System Improvements Project. Any other use on any other project is strictly prohibited. The copyright of information contained on this disk shall remain with City.

City makes no warranties, expressed or implied, including merchantability or fitness for the particular purpose relating to the accuracy or completeness of the information contained on the disk(s) or for the subsequent use of the information contained on the disk(s).

Acknowledgement by Contractor

Name (printed): _____

Title: _____

Signature: _____

Dated: _____

END OF SECTION

SECTION 01101

SAFETY, HEALTH AND EMERGENCY RESPONSE REQUIREMENTS

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. This Section describes the responsibilities of the Contractor for safety, health, and emergency response. City requires that work performed under this Section will not result in:
 - 1. Injuries to employees or other persons.
 - 2. Employee exposures to health hazards above the occupational limits established by the Occupational Health and Safety Administration (OSHA), or the American Conference of Governmental Industrial Hygienists (ACGIH).
 - 3. Exposure of area residents to harmful agents above the levels established for general public exposure by the Environmental Protection Agency (EPA), the Nuclear Regulatory Commission (NRC), or the State in which work occurs.
 - 4. Significant increases in the levels of contaminants in soil, water, or sediment near the site.
 - 5. Violations of OSHA, EPA, NRC, or State regulations.
- B. Any disregard for the provision of these Health and Safety requirements may be deemed just and sufficient cause for termination of the Contract without compensation for such termination.
- C. Contractor shall maintain a comprehensive health and safety program that addresses lines of authority and responsibility for health and safety, medical monitoring, training and equipment programs, and health and safety recordkeeping. Site-specific requirements are discussed elsewhere in this Section.
- D. Contractor shall comply with Safety and Accident Prevention requirements listed in the General Conditions, paragraph 29.

1.02 SUBMITTALS

- A. Submit, in accordance with Section 01300, one week prior to the Pre-Construction Conference or 10 days before mobilization to the job site, whichever is sooner, the following information:
 - 1. A statement that Contractor maintains a Health and Safety Program (H&SP) which addresses the issues described in Paragraph 1.07 below.
 - 2. Name of Contractor's Health and Safety Officer and certification of Health and Safety Officer's authority.

1.03 REGULATORY REQUIREMENTS

- A. Contractor's health and safety practices shall follow the standards and guidelines established in the publications listed below. These standards are incorporated in this Section by reference:
 - 1. Safety and Health Standards 29 CFR 1910 (General Industry), US Department of Labor, OSHA. (Hereafter, referred to as "29 CFR 1910")
 - 2. OSHA Safety and Health Standards 29 CFR 1926 (Construction Industry), US Department of Labor, OSHA.
- B. This Section implements and amplifies procedures and requirements of the above referenced regulations and guidelines. These publications define terms and establish procedures discussed in this Section, which incorporates them by reference. Where conflicts arise between the requirements of this Section and the above-listed standards and guidelines, the most restrictive requirement shall apply.

1.04 CONTRACTOR'S PERSONNEL

- A. Assign persons to fill each of the following roles. An individual can fill as many roles for which he or she is qualified.
- B. Health and Safety Officer – Designate an employee or company principal as its health and safety officer (HSO). This HSO must have the authority to command sufficient resources to safely perform the Work. Engineer will direct health and safety correspondence to this HSO.
- C. Site Health and Safety Coordinator
 - 1. Designate a Site Health and Safety Coordinator (SHSC) for this project. This SHSC shall provide day-to-day safety support, including training and site safety inspections. SHSC shall have the authority to stop on-site operations when conditions threaten the health or safety of employees. The SHSC shall remain on-site during all project operations.
 - 2. SHSC shall have a sound working knowledge of occupational safety and health regulations, experience in the type of project described in this Section, and training in relevant practices and techniques.
- D. On-site Operations Manager – On-site activity of this project shall be under the control of an on-site operations manager. This manager shall have demonstrable experience with this type of project.
- E. Competent Person – Projects that involve the following hazards, equipment, or activities require a Competent Person, directly involved with the task, who, by way of training and/or experience, is knowledgeable of applicable standards, is capable of identifying workplace hazards relating to the specific operation, is designated by the employer, and has authority to take prompt corrective measures to eliminate them.

1.05 TRAINING

- A. Provide appropriate training to each on-site employee or subcontractor who could be exposed to hazards. Employees shall not participate in field activities unless they have been trained to a level required by their job function and responsibility.

- B. At least one person who has been trained and certified in First Aid and CPR by the American Red Cross, or an equivalent organization shall be present on-site during all project operations.
- C. Provide a site-specific training session for personnel scheduled to work on-site. This training shall include a health and safety briefing on the following information:
 - 1. Names of personnel and alternates responsible for site safety and health.
 - 2. Hazards contractor expects at the site.
 - 3. Work practices by which the employee can minimize risks from hazards.
- D. Develop a training sequence to inform visitors of the hazards associated with the site and to explain emergency procedures.
- E. If the project involves the conditions listed in Paragraph 1.04E, maintain documentation on site that the Competent Person(s) has the appropriate training, experience, and authority for that responsibility.
- F. If the project involves hazards, equipment, or activities that require licensure by the state in which the work occurs (examples might include welding, rigging, crane operation or asbestos removal), maintain documentation on site that the employees who perform those tasks have the relevant qualifications.

1.06 ACCIDENT OR INCIDENT REPORTS

- A. If an accident, an explosion or fire, or a release of toxic materials occurs during the course of the project, notify Engineer by telephone as soon as possible after emergency response agencies have been notified. Send Engineer written notification within 24 hours.
- B. Within two working days of any reportable accident, complete and submit to Engineer, an accident report addressing the following items:
 - 1. Name, organization, telephone number, and location of the Contractor.
 - 2. Name and title of the person(s) reporting.
 - 3. Date and time of the accident/incident.
 - 4. Location of the accident/incident, i.e., site location, facility name.
 - 5. Brief summary of the accident/incident giving pertinent details including the operation ongoing at the time of the incident
 - 6. Cause of the incident, if known
 - 7. Casualties (fatalities, disabling injuries).
 - 8. Details of any existing chemical hazard or contamination.
 - 9. Estimated property damage, if applicable.

10. Nature of damage, effect on contract schedule.
11. Action taken by Contractor to ensure safety and security.
12. Other damage or injuries sustained, public or private.

1.07 HEALTH AND SAFETY PLAN

- A. Prepare a Health & Safety Plan (H&SP) that addresses each concern mentioned in this Section and other concerns the Engineer and Contractor deem necessary. Contractor's standard policies may constitute much of this H&SP. Contractor's HSO shall sign and date the H&SP.
- B. The H&SP shall include measures to be taken by Contractor and subcontractor(s) to control physical and chemical hazards associated with work at this site. The Contractor's Health and Safety Program shall address accident prevention and methods of avoiding physical hazards present at this site. The program shall address, at a minimum, the following items:
 1. Safety Organization
 2. Fire Prevention and Protection
 3. Walking and Working Surfaces
 4. Site Housekeeping
 5. Mechanical Equipment & Inspection
 6. Analysis of and controls for the tasks associate with the project, including
 - a. Grubbing and clearing,
 - b. Trenching and excavation
 - c. Demolition
 - d. Utility work
 - e. Work at elevations
 7. Daily Safety Inspections
 8. Accident Reporting
 9. Personal Protection (including respiratory) programs, (if applicable)

1.08 SITE - SPECIFIC EQUIPMENT PRACTICES

- A. Personnel shall wear the protective equipment specified in the H&SP for each on site task. Specific equipment requirements must be stated in the Contractor's Plan.

- B. Verify that any personal protective equipment used on the site, including hard hats, safety glasses, face shields, gloves, protective clothing, safety footwear, safety lines, lanyards, harnesses, electrical insulation, and high-visibility traffic safety gear carries applicable MSHA/NIOSH or ISEA approvals and that it is maintained in accordance with the manufacturer's specifications.
- C. Assign personnel to an area or a task for which a respirator might be required only if they have passed a fit test with the make and model of respirator in use. Respirators shall not be interchanged between workers without cleaning and sanitizing.
- D. Prescription eyeglasses worn on site must meet ANSI Z87.1. Provide prescription lens inserts for employees who need both prescription lenses and fullface respirators.
- E. Maintain safety-critical heavy equipment, including cranes, personnel lifts, and excavation equipment, as required by the manufacturer.

1.09 STANDARD SAFETY OPERATING PROCEDURES

- A. Maintain a set of Standard Safety Operating Procedures to be implemented for this project. Personnel shall observe contamination control rules while on-site. Eating, drinking, smoking, chewing gum or tobacco, and other practices that increase the probability of hand-to-mouth transfer and ingestion of material are prohibited in any contaminated area.
- B. Electrical installations and appliances used shall meet applicable National Electrical Code standards. All electrical devices utilized by the Contractor or his subcontractors on this project shall be grounded or equipped with and utilize ground fault circuit interrupter (GFCI) protected outlets or extension cord sets. Electrical devices used in spaces that may contain flammable vapors shall be explosion safe.

1.10 EMERGENCY PREPAREDNESS

- A. Contractor's plan for on-site and off-site emergencies shall address, at a minimum: the method by which personnel will communicate in the event of an emergency; communications with the Contractor's headquarters' office that are outside vocal range normally occur by radio; and communications between Contractor and other organizations normally occur over the telephone. Keep a list of emergency telephone numbers on site.
- B. Provide appropriate emergency equipment, including an industrial-type first aid kit that is approved by its consulting physician for injuries and illnesses that may occur on site. A 20 lb ABC-rated fire extinguisher shall be maintained on-site.
- C. All site support vehicles shall be equipped with route maps providing directions to the nearest medical treatment facility. All drivers of the support vehicles shall become familiar with the emergency route and the travel time required at the beginning of project operations.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01110

ENVIRONMENTAL PROTECTION PROCEDURES

PART 1 GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Furnish all labor, materials and equipment and perform all work required for the prevention of environmental pollution in conformance with applicable laws and regulations, during and as the result of construction operations under this Contract. For the purpose of this Section, environmental pollution is defined as the presence of chemical, physical, or biological elements or agents which adversely affect human health or welfare; unfavorably alter ecological balances of importance to human life; affect other species of importance to man; or degrade the utility of the environment for aesthetic and/or recreational purposes.
- B. The control of environmental pollution requires consideration of air, water and land, and involves management of noise and solid waste, as well as other pollutants.
- C. Schedule and conduct all work in a manner that will minimize the erosion of soils in the area of the work. Provide erosion control measures such as diversion channels, sedimentation or filtration systems, berms, staked hay bales, seeding, mulching or other special surface treatments as are required to prevent silting and muddying of streams, rivers, impoundments, lakes, etc. All erosion control measures shall be in place in an area prior to any construction activity in that area. Specific requirements for erosion and sedimentation controls are specified in Section 02276. All phases of sedimentation and erosion control shall comply with and be subject to the approval of the Virginia Department of Environmental Quality for work in Virginia.
- D. The Work shall be conducted with a minimum of disturbance to the existing ecological balance between a water resource and its surroundings. This Section includes general guidelines for such conduct. Construction means, methods, and techniques shall be used which will result in conformance with the requirements of this Section.

1.02 RELATED WORK

- A. Section 02200 - Earthwork
- B. Section 02276 - Erosion and Sedimentation Control
- C. Section 02900 – Stream and Wetland Stabilization and Planting

1.03 APPLICABLE REGULATIONS

- A. Comply with all applicable Federal, State and local laws and regulations concerning environmental pollution control and abatement.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 IMPLEMENTATION

- A. Prior to beginning the Work, meet with Owner and Engineer to develop mutual understandings relative to the administration of environmental pollution control procedures and compliance with the provisions of this Section.
- B. Insure compliance by subcontractors.
- C. Remove temporary environmental control features and incorporate permanent control features into the Work at the earliest practicable time.

3.02 NOTIFICATIONS

- A. The Owner will notify the Contractor in writing of any non-compliance with the foregoing provisions or of any environmentally objectionable acts and corrective action to be taken. Federal, state or local agencies responsible for verification of certain aspects of the environmental protection requirements may notify the Contractor in writing of any non-compliance with federal, state or local requirements. After receipt of any such notice from the Engineer or from the regulatory agency, the Contractor shall immediately take corrective action.
- B. Delivery of notices to the site of the Work shall be deemed sufficient for the purpose of formal notification.
- C. Failure or refusal to comply promptly to notifications may result in the Owner's issuance of an order to stop all or part of the Work until satisfactory corrective action has been taken. No changes to the Contract Time or Price due to such stop work orders will be made unless it is subsequently determined that the Contractor was in compliance with all requirements.

3.03 EROSION CONTROL

- A. Provide positive means of erosion control as specified, as shown on the Drawings, and as required by the erosion control permits for this project. Erosion control measures shall be used as appropriate and as specified in Section 02276. Flow of surface water into excavated areas shall be prevented. Ditches around the construction area shall also be used to carry away water resulting from temporary dewatering of excavated areas. At the completion of the work, the erosion control devices shall be removed and the ground surface restored to the original condition.

A.04 PROTECTION OF STREAMS

- A. Care shall be taken to prevent, or reduce to a minimum, any damage to any river/stream from pollution by debris, sediment or other material, or from the manipulation of equipment and/or materials in or near such river/streams. Water that has been used for washing or processing, or that contains oils or sediments that will reduce the quality of the discharge water will be diverted through a settling basin(s) or filter before being discharged to existing drainage systems.
- B. Do not discharge water from dewatering operations directly into any live or intermittent stream, river, channel, wetlands, surface water or any storm drainage system. Water from

dewatering operations shall be treated by filtration, settling basins, or other Owner/Engineer approved method to reduce the amount of sediment contained in the water to regulatory levels.

- C. All preventative measures shall be taken to avoid spillage of petroleum products and other pollutants. In the event of any spillage, prompt remedial action shall be taken in accordance with a contingency action plan regulated by the State and County.

3.05 PROTECTION OF LAND RESOURCES

- A. Land resources within the project boundaries and outside the limits of permanent work shall be restored to a condition, after completion of construction that will appear to be natural and not detract from the appearance of the project. Confine all construction activities to areas shown on the Drawings.
- B. Outside of areas requiring earthwork for the construction of the new facilities, do not deface, injure, or destroy trees or shrubs, nor remove or cut them without prior approval from Owner/Engineer. No ropes, cables, or guys shall be fastened to or attached to any existing nearby trees for anchorage unless specifically authorized by the Engineer. Where such special emergency use is permitted, first wrap the trunk with a sufficient thickness of burlap or rags over which softwood cleats shall be tied before any rope, cable, or wire is placed. Pay for and repair any damage resulting from such use, or replace with an equivalent.
- C. Where trees may possibly be defaced, bruised, injured, or otherwise damaged by construction equipment, dumping or other operations, protect such trees by placing boards, planks, or poles around them. Monuments and markers shall be protected similarly before beginning operations near them.
- D. Any trees or other landscape feature scarred or damaged by construction equipment or operations shall be restored as nearly as possible to its original condition. The Engineer will determine the appropriate method of restoration, and whether damaged trees shall be treated/healed or removed and disposed of, and subsequently replaced.
 - 1. All scars made on trees by equipment, construction operations, or by the removal of limbs larger than 1-in in diameter shall be coated as soon as possible with an approved tree wound dressing. All trimming or pruning shall be performed in an approved manner by experienced workmen with saws or pruning shears. Tree trimming with axes will not be permitted.
 - 2. Climbing ropes shall be used where necessary for safety. Trees that are to remain, either within or outside established clearing limits, that are subsequently damaged and are beyond saving in the opinion of the Engineer, shall be immediately removed and replaced.
- E. The locations of storage and other construction buildings, required temporarily in the performance of the Work, shall be on cleared portions of the job site or areas to be cleared as shown on the Drawings and shall require written approval of the Engineer and shall not be within wetlands or floodplains. The preservation of the landscape shall be an imperative consideration in the selection of all lay down sites and in the construction of temporary buildings. Drawings showing storage facilities shall be submitted to the Engineer for approval.
- F. If temporary roads or embankments and excavations work areas are necessary; submit the following for approval at least ten calendar days prior to scheduled start of such temporary work.

1. A layout of all temporary roads, excavations and embankments to be constructed within the work area.
 2. Details of temporary access road construction.
 3. Drawings and cross sections of proposed embankments and their foundations, including a description of proposed materials.
 4. A landscaping drawing showing the proposed restoration of the area. Removal of any small caliper (<3 cal) trees and shrubs outside the limits of the proposed staging area shall be indicated. The drawing shall also indicate location of required guard posts or barriers required to control vehicular traffic passing close to trees and shrubs to be maintained undamaged. The drawing shall provide for the obliteration of construction scars as such and shall provide for a natural appearing final condition of the area. Modification of approved drawings shall be made only with the written approval of the Engineer. No unauthorized road construction, excavation or embankment construction including disposal areas will be permitted.
- G. Remove all signs of temporary construction facilities such as haul roads, work areas, structures, foundations of temporary structures, stockpiles of excess of waste materials, or any other vestiges of construction. It is anticipated that excavation, filling and regrading will be required to restore the area to near natural conditions which will permit the growth of vegetation thereon. The disturbed areas shall be prepared and seeded as described in Section 02985.

3.06 PROTECTION OF AIR QUALITY

- A. Burning - The use of burning at the project site for the disposal of refuse and debris will not be permitted.
- B. Dust Control - Maintain all excavations, embankment, stockpiles, access roads, plant sites, waste areas, borrow areas and all other work areas within or without the project boundaries free from dust which could cause the standards for air pollution to be exceeded and which would cause a hazard or nuisance to others.
- C. An approved method of stabilization consisting of potable water sprinkling, covering with polyethylene, or other similar methods will be permitted to control dust. The use of petroleum products is prohibited. The use of chlorides may only be permitted with written approval from the Engineer.
- D. Sprinkling shall be repeated at such intervals as to keep all parts of the disturbed area at least damp at all times. Maintain sufficient, competent equipment on the job to accomplish this if sprinkling is used. Dust control shall be performed as the work proceeds, whenever a dust nuisance or hazard occurs, or when directed to do so by the Engineer.

3.07 MAINTENANCE OF POLLUTION CONTROL FACILITIES DURING CONSTRUCTION

- A. Maintain all facilities constructed for pollution control as long as the operations creating the particular pollutant are being carried out or until the material concerned has become stabilized to the extent that pollution is no longer being created.

3.08 NOISE CONTROL AND NOISE ABATEMENT

- A. Construction equipment shall be equipped with silencers or mufflers designed to operate with the lowest possible noise levels.
- B. Comply with local noise control ordinances.
- C. Temporary high wall enclosures may be required around “quiet pack” diesel generators, compressors, cyclones and other load noise producing equipment.

END OF SECTION

SECTION 01170
SPECIAL PROVISIONS

PART 1 GENERAL

1.01 NOISE LIMITATIONS

- A. All equipment to be furnished under this Contract, unless specified otherwise in the technical specifications, shall be designed to ensure that the sound pressure level does not exceed 85 decibels over a frequency range of 37.8 to 9600 cycles per second at a distance of 3-ft from any portion of the equipment, under any load condition, when tested using standard equipment and methods. Noise levels shall include the noise from the motor. Mufflers or external baffles shall not be acceptable for the purpose of reducing noise. Data on noise levels shall be included with the shop drawing submittal.

1.02 WEATHER PROTECTION

- A. In the event of inclement weather, the Contractor shall protect the Work and materials from damage or injury from the weather. If, in the opinion of the Engineer, any portion of the Work or materials has been damaged by reason of failure on the part of the Contractor [or subcontractors] to so protect the Work, such Work and materials shall be removed and replaced with new materials and Work to the satisfaction of the Engineer.

1.03 RELOCATIONS

- A. Be responsible for the relocation of structures that interfere with the positioning of the work as set out on the Drawings. The cost of all such relocations shall be included in the bid for the project and shall not result in any additional cost to the Owner.

1.04 OBSTRUCTIONS

- A. The attention of the Contractor is drawn to the fact that during excavation at the Project site, the possibility exists of the Contractor encountering various underground utilities or structures not shown on the Drawings. Exercise extreme care before and during excavation to locate and flag these obstructions so as to avoid damage. Should damage occur to an existing utility line, repair the line at no cost to the Owner.
- B. It is the responsibility of the Contractor to ensure that all utility or other poles, the stability of which may be endangered by the close proximity of excavation, are temporarily stayed in position while work proceeds in the vicinity of the pole and that the utility or other companies concerned be given reasonable advance notice of any such excavation by the Contractor.

1.05 PROVISIONS FOR THE CONTROL OF DUST

- A. Sufficient precautions shall be taken during construction to minimize the amount of dust created. Wetting down the site may be required or as directed by the Engineer to prevent dust as a result of vehicular traffic.

1.06 ARCHEOLOGICAL FINDS

- A. Notwithstanding anything to the contrary herein, in the event any archeological artifacts within the project are discovered during the course of the work, the Owner shall have and retain all right, title, and interest to such artifacts and shall have the further right, during the course of the Contract, to examine or cause to have examined, the site of the work for any such artifacts and to perform or have performed archeological excavations and all other related work to explore for, discover, recover and remove such artifacts from the site of the work. In the event the work or archeological examination and related work delays the Contractor's work, he/she shall be entitled to an extension of time to complete the work equal to the number of days he/she is thus delayed. Such delay shall be considered an excusable delay as defined in the supplementary conditions.

1.07 DAMAGE ON ACCOUNT OF HIGH WATER

- A. Contractor will hold himself responsible for all damage done to his/her work by heavy rains or floods and he/she shall take all reasonable precautions to provide against damages by building such temporary dikes, channels, or shoring to carry off storm water as the nature of the work may require.

1.08 WEATHER PROTECTION

- A. In the event of inclement weather, the Contractor and subcontractors shall protect the Work and materials from damage or injury from the weather. If, in the opinion of the Engineer, any portion of the Work or materials has been damaged by reason of failure on the part of the Contractor to so protect the Work, such Work and materials shall be removed and replaced with new materials and Work to the satisfaction of the Engineer.

1.09 HURRICANE PREPAREDNESS PLAN

- A. Within 30 days of the date of Notice to Proceed, submit a Hurricane Preparedness Plan to the Engineer and the Owner for approval. The Plan shall describe in detail the necessary measures which the Contractor will perform, at no additional costs to the Owner, in case of a hurricane warning. Revise Plan as required by the Engineer and Owner.

1.10 EMERGENCY PHONE NUMBERS AND ACCIDENT REPORTS

- A. Emergency phone numbers (fire, medical, police) shall be posted at the Contractor's phone and its location known to all.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01200

PROJECT MEETINGS

PART 1 GENERAL

1.01 WORK INCLUDED

- A. Engineer will schedule and administer a preconstruction meeting, periodic progress meetings, and specially called meetings throughout progress of the Work.
- B. Contractor shall:
 - 1. Submit to the Engineer agenda items for periodic progress meetings.
 - 2. Make physical arrangements for meetings.
- C. Engineer will:
 - 1. Notify Contractor of meeting times.
 - 2. Record the minutes; include significant proceedings and decisions.
 - 3. Reproduce and distribute copies of minutes after each meeting.
 - a. To participants in the meeting.
 - b. To parties affected by decisions made at the meeting or others as designated by meeting participants.
- D. Representatives of the Contractor, subcontractors and suppliers attending meetings shall be qualified and authorized to act on behalf of the entity each represents.
- E. The Contractor shall assure that all work is in compliance with Contract Documents and construction schedules.

1.02 RELATED WORK

- A. General Conditions

1.03 PRE-CONSTRUCTION MEETING

- A. A preconstruction meeting will be held before date of Notice to Proceed.
- B. Location: A central site designated by the Owner.

C. Attendance:

1. Owner
2. Engineer
3. Contractor
4. Major Subcontractors
5. Local agencies
6. Utilities
7. Others as appropriate

D. Suggested Agenda:

1. Distribution and discussion of:
 - a. List of major subcontractors and suppliers
 - b. Projected Construction Schedules
2. Critical work sequencing
3. Major equipment and material deliveries and priorities
4. Project Coordination
 - a. Designation of responsible personnel.
5. Procedures and processing of:
 - a. Correspondence
 - b. Field decisions
 - c. Proposal requests
 - d. Submittals
 - e. Change Orders
 - f. Applications for Payment
6. Distribution of Contract Documents
7. Procedures for maintaining Record Documents

8. Use of premises, Engineer's requirements
9. Construction facilities, controls and construction aids
10. Temporary utilities
11. Housekeeping procedures

1.04 PUBLIC MEETINGS

- A. The Owner may hold meetings with the public from time to time to discuss the project. If directed by the Owner, the Contractor shall attend such meetings, and be prepared to discuss aspects of the project such as schedule and impacts on the public.

1.05 PROGRESS MEETINGS

- A. Conduct regular periodic meetings. Monthly progress meetings will be held unless otherwise agreed to by the Owner, Engineer, and Contractor.
- B. Hold special meetings as required by progress of the Work.
- C. Location of the meetings to be designated by the Engineer.
- D. Attendance:
 1. Owner
 2. Engineer
 3. Contractor
 4. Subcontractors as appropriate to the agenda
 5. Suppliers as appropriate to the agenda
 6. Others as appropriate
- E. Suggested Agenda:
 1. Review, approval of minutes of previous meeting
 2. Review of work progress since previous meeting provided by Contractor
 3. Field observations, problems, or conflicts
 4. Problems which impede Construction Schedule
 5. Corrective measures and procedures to regain projected schedule
 6. Revisions to Construction Schedule
 7. Progress, schedule, during succeeding work period provided by Contractor

8. Coordination of schedules
 9. Review submittal schedules; expedite as required
 10. Status of Submittals
 11. Maintenance of quality standards
 12. Pending changes and substitutions
 13. Review proposed changes for:
 - a. Effect on Construction Schedule and on completion date
 - b. Effect on other contracts of the Project
 14. Other business
- F. The Contractor shall be prepared to discuss pertinent topics such as deliveries of materials and equipment, progress of the Work, etc.
- G. The Contractor is to provide a current shop drawing submittal log at each progress meeting.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01300

SUBMITTALS

PART 1 GENERAL

1.01 DESCRIPTION OF REQUIREMENTS

- A. This Section specifies the general methods and requirements of submissions applicable to the following work-related submittals: Shop Drawings, Product Data, Samples, Construction Schedules, and Submittal Schedules as defined in the General Conditions. Detailed submittal requirements are specified in the technical specifications sections.
- B. All submittals shall be clearly identified by reference to Specification Section, Paragraph, Drawing No. or Detail as applicable. Submittals shall be clear and legible and of sufficient size for sufficient presentation of data.

1.02 SHOP DRAWINGS, WORKING DRAWINGS, PRODUCT DATA, SAMPLES

A. Shop Drawings

- 1. Shop drawings, as provided for in the Project Special Provisions, and as specified in individual work Sections include, but are not necessarily limited to, custom-prepared data such as fabrication and erection/installation (working) drawings, scheduled information, setting diagrams, actual shopwork manufacturing instructions, custom templates, special wiring diagrams, coordination drawings, individual system or equipment inspection and test reports including performance curves and certifications, as applicable to the Work.
- 2. All shop drawings submitted by subcontractors for approval shall be sent directly to the Contractor for checking. The Contractor shall be responsible for their submission at the proper time so as to prevent delays in delivery of materials.
- 3. The Contractor shall check all subcontractors' and material suppliers' shop drawings regarding measurements, size of members, materials, and details to satisfy himself that they conform to the intent of the Drawings and Specifications. Shop drawings found to be inaccurate or otherwise in error shall be returned to the subcontractors for correction before submission thereof.
- 4. All details on shop drawings submitted for approval shall show clearly the relation of the various parts to the main members and lines of the structure, and where correct fabrication of the work depends upon field measurements; such measurements shall be made and noted on the drawings before being submitted for approval.

B. Product Data

- 1. Product data as specified in individual Sections, include, but are not necessarily limited to, standard prepared data for manufactured products (sometimes referred to as catalog data), such as the manufacturer's product specification and installation instructions, availability of colors and patterns, manufacturer's printed statements of compliances and applicability, roughing-in diagrams and templates, catalog cuts, product photographs, standard wiring diagrams, printed performance curves and operational-range diagrams, production or quality control inspection and test reports and certifications, mill reports, product operating and

maintenance instructions and recommended spare-parts listing and printed product warranties, as applicable to the Work.

C. Working Drawings

1. When used in the Contract Documents, the term "working drawings" shall be considered to mean the Contractor's plans for temporary structures such as temporary bulkheads, support of open cut excavation, support of utilities, ground water control systems, forming and false work; and for such other work as may be required for construction but does not become an integral part of the Project.
2. Working drawings shall be prepared and sealed by a registered Professional Engineer, currently licensed to practice in the Commonwealth of Virginia. The Contractor shall submit a letter of certification from the Professional Engineer stating that he/she has prepared the designs and has verified that the materials/ equipment have been installed as designed. No working drawings or calculations/computations relating to the working drawings shall be submitted to the Engineer unless specifically requested in writing.

D. Samples

1. Samples specified in individual Sections, include, but are not necessarily limited to, physical examples of the work such as sections of manufactured or fabricated work, small cuts or containers of materials, complete units of repetitively-used products, color/texture/pattern swatches and range sets, specimens for coordination of visual effect, graphic symbols and units of work to be used by the Engineer for independent inspection and testing, as applicable to the Work.

1.03 CONTRACTOR'S RESPONSIBILITIES

- A. The Contractor shall review shop drawings, product data and samples, including those by subcontractors, prior to submission to determine and verify the following:
 1. Field measurements
 2. Field construction criteria
 3. Catalog numbers and similar data
 4. Conformance with the Specifications
- B. Each shop drawing, sample and product data submitted by the Contractor shall have affixed to it the following Certification Statement including the Contractor's Company name and signed by the Contractor: "Certification Statement: By this submittal, I hereby represent that I have determined and verified all field measurements, field construction criteria, materials, dimensions, catalog numbers and similar data and I have checked and coordinated each item with other applicable approved shop drawings and all Contract requirements." Shop drawings and product data sheets 11-in x 17-in and smaller shall be bound together in an orderly fashion and bear the above Certification Statement on the cover sheet. The cover sheet shall fully describe the packaged data and include a listing of all items within the package. Provide to the Engineer a copy of each submittal transmittal sheet for shop drawings, product data and samples at the time of submittal of said drawings, product data and samples to the Engineer.

- C. In addition to the Contractor's Certification Statement required in 2.a. above, each shop drawing, catalog cut, working drawing, sample and product data pertaining to iron, steel, or manufactured goods, as defined in Section 01000 shall have affixed to it, by the manufacturer, the following certification statement:

“Certification Statement: By this submittal, the Manufacturer hereby represents and warrants that all iron, steel, or manufactured goods represented in this submittal will be and/or have been produced in the United States in a manner that complies with the Buy American Requirements, unless a waiver of the requirements is approved, and the Manufacturer will provide any further verified information, certification or assurance of compliance with this paragraph, or information necessary to support reporting requirements or a waiver of the Buy American Requirements, as may be requested by the Owner.”

- D. Shop drawings, working drawings, and product data sheets 11 in x 17 in and smaller shall be bound together in an orderly fashion and bear the above Certification Statement on the cover sheet. The transmittal cover sheet for each identified shop drawing shall fully describe the packaged data and include a listing of all items within the package.
- E. No submittals will be approved unless they have the manufacturer's Certification Statement affixed to them, or a waiver has been applied for and received. No materials or equipment shall be shipped to the site without the Certification Statement or waiver.
- F. The Contractor shall utilize a 10-character submittal identification numbering system in the following manner:
1. The first character shall be a D, S, P, or M, which represents Shop/Working Drawing and other Product Data (D), Sample (S), Preliminary Submittal (P), or Operating/Maintenance Manual (M).
 2. The next five digits shall be the applicable Specification Section Number.
 3. The next three digits shall be the numbers 001-999 to sequentially number each initial separate item or drawing submitted under each specific Section number.
 4. The last character shall be a letter, A-Z, indicating the submission, or resubmission of the same Drawing, i.e., "A=1st submission, B=2nd submission, C=3d submission, etc. A typical submittal number would be as follows:

D-03300-008-B

D	=	Shop Drawing
03300	=	Specification Section for Concrete
008	=	The eighth initial submittal under this specification section
B	=	The second submission (first resubmission) of that particular shop drawing

- G. Notify the Engineer in writing, at the time of submittal, of any deviations in the submittals from the requirements of the Contract Documents.
- H. The review and approval of shop drawings, samples or product data by the Engineer shall not relieve the Contractor from his/her responsibility with regard to the fulfillment of the terms of the

Contract. All risks of error and omission are assumed by the Contractor and the Engineer will have no responsibility therefor.

- I. No portion of the work requiring a shop drawing, sample, or product data shall be started nor shall any materials be fabricated or installed prior to the approval or qualified approval of such item. Fabrication performed, materials purchased or on-site construction accomplished which does not conform to approved shop drawings and data shall be at the Contractor's risk. The City will not be liable for any expense or delay due to corrections or remedies required to accomplish conformity.
- J. Project work, materials, fabrication, and installation shall conform with approved shop drawings, applicable samples, and product data.

1.04 SUBMISSION REQUIREMENTS

- A. Make submittals promptly in accordance with approved schedule, and in such sequence as to cause no delay in the Work or in the work of any other contractor.
- B. Each submittal, appropriately coded, will be returned within 21 days for multiple discipline review and 14 days for single discipline review following receipt of submittal by the Engineer.
- C. Number of submittals required:
 - 1. Shop Drawings as defined in Paragraph 1.02 A: Four copies.
 - 2. Product Data as defined in Paragraph 1.02 B: Four copies.
 - 3. Samples: Submit the number stated in the respective Specification Sections.
- D. Submittals shall contain:
 - 1. The date of submission and the dates of any previous submissions.
 - 2. The Project title and number.
 - 3. Contractor identification.
 - 4. The names of the Contractor, Supplier, and Manufacturer.
 - 5. Identification of the product, with the specification section number, page and paragraph(s).
 - 6. Field dimensions, clearly identified as such.
 - 7. Relation to adjacent or critical features of the Work or materials.
 - 8. Applicable standards, such as ASTM or Federal Specification numbers.
 - 9. Identification of deviations from Contract Documents.
 - 10. Identification of revisions on resubmittals.
 - 11. An 8-in x 3-in blank space for Contractor and Engineer stamps.

1.05 REVIEW OF SHOP DRAWINGS, PRODUCT DATA, WORKING DRAWINGS AND SAMPLES

- A. The review of shop drawings, data, and samples will be for general conformance with the design concept and Contract Documents. They shall not be construed:
 - 1. as permitting any departure from the Contract requirements;
 - 2. as relieving the Contractor of responsibility for any errors, including details, dimensions, and materials;
 - 3. as approving departures from details furnished by the Engineer, except as otherwise provided herein.
- B. The Contractor remains responsible for details and accuracy, for coordinating the work with all other associated work and trades, for selecting fabrication processes, for techniques of assembly, and for performing work in a safe manner.
- C. If the shop drawings, data or samples as submitted describe variations and show a departure from the Contract requirements which Engineer finds to be in the interest of the City and to be so minor as not to involve a change in Contract Price or time for performance, the Engineer may return the reviewed drawings without noting an exception.
- D. Submittals will be returned to the Contractor under one of the following codes.
 - Code 1 - "APPROVED" is assigned when there are no notations or comments on the submittal. When returned under this code the Contractor may release the equipment and/or material for manufacture.
 - Code 2 - "APPROVED AS NOTED". This code is assigned when a confirmation of the notations and comments IS NOT required by the Contractor. The Contractor may release the equipment or material for manufacture; however, all notations and comments must be incorporated into the final product.
 - Code 3 - "APPROVED AS NOTED/CONFIRM". This combination of codes is assigned when a confirmation of the notations and comments IS required by the Contractor. The Contractor may release the equipment or material for manufacture; however, all notations and comments must be incorporated into the final product. This confirmation shall specifically address each omission and nonconforming item that was noted. Confirmation is to be received by the Engineer within 15 calendar days of the date of the Engineer's transmittal requiring the confirmation.
 - Code 4 - "APPROVED AS NOTED/RESUBMIT". This combination of codes is assigned when notations and comments are extensive enough to require a resubmittal of the package. This resubmittal is to address all comments, omissions and non-conforming items that were noted. Resubmittal is to be received by the Engineer within 15 calendar days of the date of the Engineer's transmittal requiring the resubmittal.
 - Code 5 - "NOT APPROVED" is assigned when the submittal does not meet the intent of the Contract Documents. The Contractor must resubmit the entire package revised to

bring the submittal into conformance. It may be necessary to resubmit using a different manufacturer/vendor to meet the Contract Documents.

Code 6 - "COMMENTS ATTACHED" is assigned where there are comments attached to the returned submittal which provide additional data to aid the Contractor.

Code 7 - "RECEIPT ACKNOWLEDGED" - This code is assigned to acknowledge receipt of a submittal that is not subject to the Engineer's review and approval; and, is being filed for informational purposes only. This code is generally used in acknowledging receipt of *means and methods of construction* work plan, field conformance test reports, and Health and Safety plans.

Codes 1 through 5 designate the status of the reviewed submittal with Code 6 showing there has been an attachment of additional data.

- E. Resubmittals will be handled in the same manner as first submittals. On resubmittals the Contractor shall direct specific attention, in writing on the letter of transmittal and on resubmitted shop drawings by use of revision triangles or other similar methods, to revisions other than the corrections requested by the Engineer, on previous submissions. Any such revisions which are not clearly identified shall be made at the risk of the Contractor. The Contractor shall make corrections to any work done because of this type revision that is not in accordance to the Contract Documents as may be required by the Engineer.
- F. Partial submittals may not be reviewed. The Engineer will be the only judge as to the completeness of a submittal. Submittals not complete will be returned to the Contractor, and will be considered "Not Approved" until resubmitted. The Engineer may at his/her option provide a list or mark the submittal directing the Contractor to the areas that are incomplete.
- G. Repetitive Review
 - 1. Shop drawings and other submittals will be reviewed no more than twice at the City's expense. All subsequent reviews will be performed at times convenient to the Engineer and at the Contractor's expense, based on the Engineer's then prevailing rates. The Contractor shall reimburse the City for all such fees invoiced by the Engineer. Submittals are required until approved.
 - 2. Any need for more than one resubmission, or any other delay in obtaining Engineer's review of submittals, will not entitle Contractor to extension of the Contract Time.
- H. If the Contractor considers any correction indicated on the shop drawings to constitute a change to the Contract Documents, the Contractor shall give written notice thereof to the Engineer at least seven working days prior to release for manufacture.
- I. When the shop drawings have been completed to the satisfaction of the Engineer, the Contractor shall carry out the construction in accordance therewith and shall make no further changes therein except upon written instructions from the Engineer.
- J. Request For Information (RFI) shall be submitted in writing to the Engineer. RFI's shall indicate their importance to the timely completion of the project. RFI's will be processed as a shop drawing with 30 days allowed for review time, unless otherwise agreed upon.

1.06 DISTRIBUTION

Distribute reproductions of approved shop drawings and copies of approved product data and samples, where required, to the job site file and elsewhere as directed by the Engineer. Number of copies shall be as directed by the Engineer but shall not exceed 6.

1.07 CONSTRUCTION SCHEDULING

- A. Critical Path Method (CPM) construction schedule shall be used to control the work of this Contract and to provide a definitive basis for determining job progress. The Contractor bears responsibility for scheduling all phases and stages of the work to insure successful prosecution and completion within the time specified in accordance with all provisions of these Specifications. The Contractor and his/her subcontractors shall be responsible for cooperating fully with the Engineer in effectively utilizing the CPM schedule.
- B. Within fifteen (15) calendar days following the receipt of the Notice to Proceed, the Contractor shall submit two prints of the proposed CPM schedule to the Engineer. Following receipt and preliminary concurrence by the Engineer of the schedule, a pre-construction conference will be held between the Engineer, and Contractor, to review and if necessary, revise the schedule. Following this review, the Contractor shall incorporate the Engineer's comments into the schedule and submit five prints of the revised schedule. This final submittal shall be delivered to the Engineer within 45 days after the Notice to Proceed.
- C. The CPM schedule to be prepared and submitted by the Contractor shall consist of the following:
 - 1. Activity numbers
 - 2. Planned duration
 - 3. Activity description
 - 4. Early start date (calendar dated)
 - 5. Early finish date (calendar dated)
 - 6. Latest allowable start date (calendar dated)
 - 7. Latest allowable finish date (calendar dated)
 - 8. Status (whether critical)
 - 9. Estimated cost of the activity
 - 10. Float time
 - 11. Activities that are completed or in process are to be identified on the Schedule by contrasting heavy lines. Each activity worked on should be proportional to the percentage of progress achieved to date.
 - 12. Restraints imposed by material deliveries, precedent activity durations or schedule adjustments, are to be appropriately represented on the monthly update of the Schedule.
 - 13. Each schedule shall be prefaced with the following summary data: Contract name and number; Contractor's Name; Contract duration; Contract schedule; the effective or starting date of the schedule (the date indicated in the Notice to Proceed).
- D. Supplemental to the Schedule, the Contractor shall provide a detailed work schedule, projected at least a month in advance. The implementation of the work schedule and the coordination required will constitute the basic agenda of the coordination and planning meetings.
- E. Whenever it becomes apparent from the current CPM schedule that delays to the critical path have resulted and the contract completion date will not be met, or when so directed by the Engineer, the Contractor shall take some or all of the following actions at no additional cost to the City. Contractor shall submit to the Engineer for review, a written statement of the steps he/she intends to take to remove or arrest the delay to the critical path in the current schedule.

1. Increase construction workforce in such quantities and crafts as will substantially eliminate the backlog of work.
 2. Increase the number of working hours per shift, shifts per day, working days per week, the amount of construction equipment, or any combination of the foregoing, sufficiently to substantially eliminate the backlog of work.
 3. Reschedule activities to achieve maximum practical concurrence of accomplishment of activities and comply with the revised schedule.
- F. If, when so requested by the Engineer, the Contractor should fail to submit a written statement of the steps he/she intends to take or should fail to take such steps as approved by the Engineer, the Engineer may direct the Contractor to increase the level of effort in the workforce (trades), equipment and work schedule (overtime, weekend and holiday work, etc.) to be employed by the Contractor in order to remove the delay to the critical path in the concurred schedule and the Contractor shall promptly provide such level of effort at no additional cost to the City.
- G. If the Contractor desires to make changes in his/her method of operating which affect the concurred CPM schedule, he/she shall notify the Engineer in writing stating what changes are proposed and the reason for the change. If the Engineer accepts these changes, the Contractor shall revise and submit for review, without additional cost to the City, all of the affected portions of the CPM schedule. The CPM schedule shall be adjusted by the Contractor only after prior review of his/her proposed changes by the Engineer. The addition of extraneous, non-working activities and activities which add unacceptable restraints to the CPM schedule shall not be allowed.
- H. The Contract Time will be adjusted only for causes specified in this Contract. In the event the Contractor requests an extension of any contract completion date, he/she shall furnish such justification and supporting evidence as the Engineer may deem necessary to determine whether the Contractor is entitled to an extension of time under the provisions of this Contract. The Engineer will, after receipt of such justification and supporting evidence, make findings of fact and will advise the Contractor in writing thereof. If the Engineer finds that the Contractor is entitled to any extension of any contract completion date, the Engineer's determination as to the total number of days extension shall be based upon the currently concurred CPM schedule and on all data relevant to the extension. Such data shall be included in the next updating of the schedule. Actual delays in activities which, according to the CPM schedule, do not affect any contract completion date shown by the critical path in the network will not be the basis for a change therein.
- I. Each request for change in any contract completion date shall be submitted by the Contractor to the Engineer within 10 days after the beginning of the delay for which a time extension is requested. No time extension will be granted for requests, which are not submitted within the forgoing time limit.
1. From time to time it may be necessary for the contract schedule or completion time to be adjusted by the Engineer to reflect the effects of job conditions, weather, technical difficulties, strikes, unavoidable delays on the part of the City or its representatives and other unforeseeable conditions which may indicate schedule adjustments or completion time extensions. Under such conditions, the Engineer will direct the Contractor to reschedule the work or contract completion time to reflect the changed conditions and the Contractor shall revise his/her schedule changes except for approved contract time extensions beyond the actual completion of all unaffected work, in which case the Contractor shall take all possible

action to minimize any time extension and any additional cost to the City. Available float time in the CPM schedule may be used by the City as defined by the Engineer, as well as by the Contractor.

- J. The City controls the float time in the CPM schedule and, therefore, without obligation to extend either the overall completion date or any intermediate completion dates set out in the CPM schedule, the City may initiate changes to the work that absorb float time only. City initiated changes that affect the critical path on the current CPM schedule shall be the sole grounds for extending (or contracting) said completion dates. Contractor-initiated changes that encroach on the float time identified in the current CPM schedule may be accomplished with the Engineer's concurrence. Such changes, however, shall give way to City-initiated changes competing for the same float time.

1.08 PROFESSIONAL ENGINEER (P.E.) CERTIFICATION FORM

- A. If specifically required in other Sections of these Specifications, the Contractor shall submit a P.E. Certification for each item required, in the form attached to this Section, completely filled in and stamped.

1.09 GENERAL PROCEDURES FOR SUBMITTALS

- A. Coordination of Submittal Times: Prepare and transmit each submittal sufficiently in advance of performing the related work or other applicable activities, or within the time specified in the individual work sections, of the Specifications, so that the installation will not be delayed by processing times including disapproval and resubmittal (if required), coordination with other submittals, testing, purchasing, fabrication, delivery and similar sequenced activities. No extension of time will be authorized because of the Contractor's failure to transmit submittals sufficiently in advance of the Work.

END OF SECTION

(FORM FOLLOWS)

P.E. CERTIFICATION FORM

The undersigned hereby certifies that he/she is a Professional Engineer registered in the Commonwealth of Virginia and that he/she has been employed by (Name of Contractor) _____ to design _____ in accordance with Specification Section _____ for the (Name of Project) _____. The undersigned further certifies that he/she has performed the design of the _____, that said design is in conformance with all applicable local, state and federal codes, rules, and regulations, and that his/her signature and P.E. stamp have been affixed to all calculations and drawings used in, and resulting from, the design.

The undersigned hereby agrees to make all original design drawings and calculations available to the City of Raleigh within five working days following written request therefor by the Engineer.

P.E. Name

Signature

Address

Contractor's Name

Signature

Title

Address

SECTION 01380

PRE- AND POST-CONSTRUCTION VIDEO PHOTOGRAPHY AND PHOTOGRAPHS

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. Furnish all labor materials, equipment, and incidentals required to video and/or photograph all construction areas within the project area, as shown in the Drawings and as specified herein, prior to any Work and after all Work is finished.

1.02 QUALIFICATIONS

- A. The photography shall be performed in a competent, professional manner.

1.03 COST OF PHOTOGRAPHY

- A. The cost of the photography shall be a subsidiary obligation of the Contractor, and no separate payment will be made.

1.04 VIDEO PHOTOGRAPHY REQUIRED

- A. DVD format recordings shall be made not more than 60 days prior to construction and 60 days after substantial completion.
- B. The Contractor shall video the project site in its entirety before construction begins, with emphasis on properties adjoining the project, drives, trees, buildings, structures, parking lots, roadways, landscaping, utility location markings, initial survey stake locations, appurtenances and other distinguishing features. Appropriate narration will include location and description of property and physical features. The Contractor shall provide three (3) copies of the project site video on DVD format to the Engineer for review and acceptance at least seven (7) calendar days prior to beginning any activity on the project site. Construction shall not commence until the project site video is approved in writing by the Engineer. No separate payment will be made for this work, and all associated costs will be considered incidental to other items in the contract.
- C. The Engineer shall have the authority to reject all or any portion of a DVD not conforming to specifications and order that it be redone at no additional charge. The Contractor shall reschedule unacceptable coverage within five days after being notified. The Engineer shall designate those areas, if any, to be omitted from or added to the audio-visual coverage. All DVDs and written records shall be immediately submitted to and become the property of the City.

1.05 PHOTOGRAPHY REQUIRED

- A. The Contractor shall photograph the project site in its entirety before construction begins, with emphasis on EACH INDIVIDUAL property adjoining the project, drives, trees, buildings, structures, parking lots, roadways, landscaping, utility location markings, initial survey stake locations, appurtenances and other distinguishing features. A digital photograph log shall be prepared which includes a brief description of the location of each photograph with additional description of the property and physical features for each photograph. The Contractor shall

provide three (3) copies of the digital photographs in Compact Disk (CD) format to the Engineer for review and acceptance prior to commencement of construction. Construction shall not commence until the digital photographs of the project site are approved in writing by the Engineer. No separate payment will be made for this work, and all associated costs will be considered incidental to other items in the contract.

B. Digital files:

1. The Contractor shall maintain digital files for a period of two (2) years from Date of Substantial Completion of entire project and then shall convey the digital files to the Engineer.

PART 2 PRODUCTS

2.01 AUDIO-VISUAL RECORDING

- A. The audio-visual system and the procedures employed in its use shall be such as to produce a professional quality DVD that meets professional standards. The video portion of the recording shall produce bright, sharp, clear pictures with accurate colors and shall be free from distortion or any other form of picture imperfection. All video recordings shall by electronic means display on the screen the time of day, the month, day and year of the recording. This time and date information must be continuously and simultaneously generated with the actual recording.

2.02 PRINTS

- A. Include two copies of all the prints in digital format (jpg or tiff picture format) on CD with each submittal.

PART 3: EXECUTION

3.01 VIDEO RECORDING

- A. The Engineer shall be present at all times during video recording.
- B. The recordings shall contain coverage of all visible features within the construction zone of influence. These features shall include, but not be limited to, all roadways, pavement, curbs, driveways, sidewalks, culverts, head-walls, retaining walls, landscaping, trees, fences, visible utilities, structures and buildings. Of particular concern shall be the condition of existing vegetation, terrain, roadway pavement, curb and gutter, and structures and the existence or non-existence of any faults, fractures or defects. Panning, zoom-in and zoom-out rates shall be sufficiently controlled to maintain a clear view of the subjects.
- C. In general the views will comprise a 360 degree panorama every 100 feet of project length plus specifically designated close-up views for pre- and post-construction video photography. Total recording time will be approximately 4 hours each for pre- and post-construction video photography.
- D. Each DVD shall begin with the project name, contract name and number, Contractor's name, date, and location information such as street name, direction of travel, viewing side, etc.

E. Information appearing on the DVD must be continuous and run simultaneously by computer generated transparent digital information. No editing or overlaying of information at a later date will be acceptable.

F. Digital information will be as follows:

1. Name of Contractor
2. Day, Date, and Time
3. Name of Project
4. Route of travel
5. Viewing side
6. Stationing

G. Time must be continuously generated.

H. Engineering station numbers must be continuous, be accurate, and correspond to project stationing. The symbols should be the standard engineering symbols (i.e., 16+64).

I. Written documentation must coincide with the information on the tape so as to make easy retrieval of locations sought for at a later date.

J. The video system shall have the capability to transfer individual frames of video electronically into hard copy prints or photographic negatives.

3.02 AUDIO RECORDING

- A. Audio shall be recorded at the same time as the video recording and shall have the same information as the viewing screen. Special commentary will be given by the Engineer and Contractor for unusual conditions of buildings, sidewalks, paving, head-walls, railroad tracks, foundations, trees, landscaping, fences, visible utilities, etc.

3.03 FINAL PRODUCT

- A. The final product shall be two sets DVDs - one set pre-construction and one set post-substantial completion.
- B. Three copies of each set shall be delivered to the Engineer.

3.04 DELIVERY OF PHOTOS

- A. Deliver photos (3 sets) to the Engineer to accompany the Application for Payment.
- B. No construction shall start until preconstruction photography is completed and submitted to Engineer.

END OF SECTION

SECTION 01410

TESTING AND LABORATORY SERVICES

PART 1 GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Owner will employ and pay for the services of an independent Quality Assurance Laboratory (QAL) to perform soil, concrete, and stone material testing specifically indicated in the Contract Documents and may at any time elect to have materials and equipment tested for conformity with the Contract Documents.
 - 1. Contractor shall cooperate with the laboratory to facilitate the execution of its required services.
 - 2. Employment of the laboratory shall in no way relieve Contractor's obligations for quality control to perform the Work of the Contract.
 - 3. Contractor shall be responsible for quality control.

1.02 RELATED REQUIREMENTS

- A. Conditions of the Contract: Inspections and testing required by laws, ordinances, rules, regulations, orders or approvals of public authorities.
- B. Respective sections of specifications: Certification of products.
- C. Each specification section listed: Laboratory tests required and standards for testing.
- D. Testing Laboratory inspection, sampling and testing is required for but not limited to the following:
 - 1. Section 02220: Earthwork
 - 2. Section 02930: Upland Loaming and Seeding
 - 4. Section 02955: Stream and Wetland Stabilization and Planting

1.03 LIMITATIONS OF AUTHORITY OF TESTING LABORATORY

- A. Laboratory is not authorized to:
 - 1. Release, revoke, alter or enlarge on requirements of Contract Documents.
 - 2. Approve or accept any portion of the Work.
 - 3. Perform any duties of the Contractor.

1.04 CONTRACTOR'S RESPONSIBILITIES

- A. Cooperate with laboratory personnel, provide access to work, to manufacturer's operations.
- B. Secure and deliver (by hand or overnight delivery service) to the laboratory adequate quantities of representative samples of materials proposed to be used and which require testing.
- C. Provide to the laboratory designated by the Engineer the preliminary design mix proposed to be used for concrete and other materials mixes which require control by the testing laboratory.
- D. Materials and equipment used in the performance of work under this Contract are subject to inspection and testing at the point of manufacture or fabrication. Standard specifications for quality and workmanship are indicated in the Contract Documents. The Engineer may require the Contractor to provide statements or certificates from the manufacturers and fabricators that the materials and equipment provided by them are manufactured or fabricated in full accordance with the standard specifications for quality and workmanship indicated in the Contract Documents. All costs of this testing and providing statements and certificates shall be a subsidiary obligation of the Contractor, and no extra charge to the Owner shall be allowed on account of such testing and certification.
- E. Furnish incidental labor and facilities:
 - 1. To provide access to work to be tested.
 - 2. To obtain and handle samples at the Project site or at the source of the product to be tested.
 - 3. To facilitate inspections and tests.
 - 4. For storage and curing of test samples.
- F. Notify laboratory sufficiently in advance (48 hours minimum) of operations to allow for laboratory assignment of personnel and scheduling of tests.
 - 1. When tests or inspections cannot be performed after such notice, reimburse Owner for laboratory personnel and travel expenses incurred due to Contractor's negligence.
- G. Employ and pay for the services of the same or a separate, equally qualified independent testing laboratory to perform additional inspections, sampling and testing required for the Contractor's convenience.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01510

MAINTENANCE OF FLOW IN EXISTING PIPES

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. Furnish all labor, materials, equipment and incidentals required to maintain wastewater and storm drainage flow in all public and private pipes, including individual service connections, during construction.
- B. In accordance with the Project Special Provisions, construct and maintain all temporary bypass sewers and drains and be responsible for all by-pass pumping of sewage and drainage that may be required to prevent backing up of sewage and to allow proper inspection, testing, or drainage during pipe and culvert installation.

1.02 SUBMITTALS

- A. The Contractor shall submit to the Engineer a schedule to complete the work. It will include the sequencing and coordination of pipe and culvert cleaning, inspection, testing, and the handling of stormwater and wastewater flow during construction.
- B. The Contractor shall submit to the Engineer, for approval, a detailed written plan of all methods of flow maintenance ten (10) days in advance of flow interruption. All procedures for maintaining flows must be certified by a Professional Engineer in accordance with Section 01300 and meet the approval of the Engineer.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 MAINTENANCE OF FLOW IN EXISTING SEWERS AND DRAINS

- A. When by-pass pumping is required the Contractor shall supply pumps, conduits, power, and other equipment to divert the flow of sewage or drainage around the section in which work is to be performed. The by-pass system shall be of sufficient capacity to handle existing flows plus additional flows that may occur during a rain event.
- B. Flows from private, commercial and industrial users shall be handled by the Contractor during the culvert replacement without interruption.
- C. The Contractor shall be required to repair at his own expense any damage to public or private property caused by his operations.
- D. Should damage of any kind occur to the existing drains or sewers, the Contractor shall at his own expense make repairs to the satisfaction of the Engineer.
- E. The Contractor shall not be permitted to overflow, bypass pump or by any other means convey sanitary sewage flows to any land, street, storm drain or water course.

END OF SECTION

SECTION 01600

DELIVERY, STORAGE AND HANDLING

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. This Section specifies the general requirements for the delivery handling, storage and protection for all items required in the construction of the work. Specific requirements, if any, are specified with the related item.

1.02 TRANSPORTATION AND DELIVERY

- A. Transport and handle items in accordance with manufacturer's instructions.
- B. Schedule delivery to reduce long-term on-site storage prior to installation and/or operation. Under no circumstances shall equipment be delivered to the site more than one month prior to installation without written authorization from the Engineer.
- C. Coordinate delivery with installation to ensure minimum holding time for items that are hazardous, flammable, easily damaged or sensitive to deterioration.
- D. Deliver products to the site in manufacturer's original sealed containers or other packing systems, complete with instructions for handling, storing, unpacking, protecting and installing.
- E. All items delivered to the site shall be unloaded and placed in a manner, which will not hamper the Contractor's normal construction operation or those of subcontractors and other contractors and will not interfere with the flow of necessary traffic.
- F. Provide necessary equipment and personnel to unload all items delivered to the site.
- G. Promptly inspect shipment to assure that products comply with requirements, quantities are correct and items are undamaged. For items furnished by others (i.e. Owner, other Contractors), perform inspection in the presence of the Engineer. Notify Engineer verbally, and in writing, of any problems.

1.03 STORAGE AND PROTECTION

- A. Store and protect products in accordance with the manufacturer's instructions, with seals and labels intact and legible. Storage instruction shall be studied by the Contractor and reviewed with the Engineer by him/her. Instruction shall be carefully followed and a written record of this kept by the Contractor. Arrange storage to permit access for inspection.
- B. Store loose granular materials on solid flat surfaces in a well-drained area. Prevent mixing with foreign matter.
- C. Cement and lime shall be stored under a roof and off the ground and shall be kept completely dry at all times. All structural, miscellaneous and reinforcing steel shall be stored off the ground or otherwise to prevent accumulations of dirt or grease and in a position to prevent

accumulations of standing water and to minimize rusting. Beams shall be stored with the webs vertical. Precast concrete shall be handled and stored in a manner to prevent accumulations of dirt, standing water, staining, chipping or cracking. Brick, block and similar masonry products shall be handled and stored in a manner to reduce breakage, cracking and spalling to a minimum.

END OF SECTION

SECTION 01630

SUBSTITUTIONS AND PRODUCT OPTIONS

PART 1 GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Furnish and install Products specified, under options and conditions for substitutions stated in this Section.
- B. Whenever a product, material or item of equipment is specified or described by using the name of a proprietary product or the name of a particular manufacturer or vendor, followed by the phrase "or equal," the specific item mentioned shall be the basis upon which bids are to be prepared, and shall be understood as establishing the type, function, dimension, appearance and quality desired. Other manufacturer's or vendor's products not named will be considered as substitutions, provided the required information is submitted in the manner set forth in this section and provided the substitution will not require substantial revision to the Contract Documents.

1.02 RELATED WORK

- A. Bid Schedule of Prices
- B. General Conditions
- C. Project Special Provisions

1.03 SUBMITTALS

- A. Bidders shall submit their list of proposed substitutions and the proposed monetary changes associated therewith to the City on the standard form provided together with their bids.

1.04 CONTRACTOR'S OPTIONS

- A. For Products specified only by reference standard, select product meeting that standard, by any manufacturer.
- B. For Products specified by naming several products or manufacturers, select any one of products and manufacturers named which complies with Specifications.
- C. For Products specified by naming one or more products or manufacturers and stating "or equal," submit a request for substitutions, for any product or manufacturer which is not specifically named.
- D. For Products specified by naming only one product and manufacturer, there is no option and no substitution will be allowed.

1.05 SUBSTITUTIONS

- A. In order for substitutions to be considered, the Contractor shall submit, within 30 days of issuance of Notice of Award, complete data as set forth herein to permit complete analysis of all proposed substitutions noted on his substitutions list. No substitution shall be considered unless the Contractor provides the required data in accordance with the requirements of this Section within the 30 day period.
- B. Submit separate request for each substitution. Support each request with:
 - 1. Complete data substantiating compliance of proposed substitution with requirements stated in Contract Documents:
 - a. Product identification, including manufacturer's name and address.
 - b. Manufacturer's literature; identify:
 - 1) Product description.
 - 2) Reference standards.
 - 3) Performance and test data.
 - 4) Operation and maintenance data.
 - c. Samples, as applicable.
 - d. Complete List of product installations including quantities installed, dates of installation, and references (Name, Address, and Phone Numbers).
 - 2. Itemized comparison of the proposed substitution with product specified; List significant variations. Substitution shall not change design intent and shall perform equal to that specified.
 - 3. Data relating to impact on construction schedule occasioned by the proposed substitution.
 - 4. Any effect of substitution on separate contracts.
 - 5. List of changes required in other work or products.
 - 6. Accurate cost data comparing proposed substitution with product specified.
 - a. Amount of any net change to Contract Sum.
 - 7. Designation of required license fees or royalties.
 - 8. Designation of availability of maintenance services, sources of replacement materials.

- C. Substitutions will not be considered for acceptance when:
 - 1. They are indicated or implied on shop drawings or product data submittals without a formal request from Contractor.
 - 2. They are requested directly by a subcontractor or supplier.
 - 3. Acceptance will require substantial revision of Contract Documents.
- D. The Engineer's decision regarding evaluation of substitutions shall be considered final and binding. Requests for time extensions and additional costs based on submission of, acceptance of, or rejection of substitutions will not be allowed. All approved substitutions will be incorporated into the Agreement by Change Order.

1.06 CONTRACTOR'S REPRESENTATION

- A. In making formal request for substitution, Contractor represents that:
 - 1. He has investigated proposed product and has determined that it is equal to or superior in all respects to that specified.
 - 2. He will provide same warranties or bonds for substitution as for product specified.
 - 3. He will coordinate installation of accepted substitution into the Work, and will make such changes as may be required for the Work to be complete in all respects.
 - 4. He waives claims for additional costs caused by substitution which may subsequently become apparent.
 - 5. Cost data is complete and includes related costs under his Contract, but not:
 - a. Costs under separate contracts.
 - b. Engineer's costs for redesign or revision of Contract Documents.

1.07 ENGINEER DUTIES

- A. Review Contractor's requests for substitutions with reasonable promptness.
- B. Notify Contractor, in writing, of decision to accept or reject requested substitution.

PART 2 PRODUCTS (Not Used)

PART 3 EXECUTION (Not Used)

END OF SECTION

SECTION 01700

CONTRACT CLOSEOUT

PART 1 GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Comply with requirements stated in the General Conditions and in Specifications for administrative procedures in closing out the Work.

1.02 RELATED WORK

- A. General Conditions
- B. Section 01720 – Project Record Documents

1.03 SUBSTANTIAL COMPLETION

- A. When the Contractor considers the Work to be Substantially Complete, he shall submit to the Engineer:
 - 1. A written notice that the Work is substantially complete.
 - 2. A list of items to be completed or corrected.
- B. Within a reasonable time after receipt of such notice, the Engineer will make an inspection to determine the status of completion.
- C. Should the Engineer determine that the Work is not Substantially Complete:
 - 1. The Engineer will promptly notify the Contractor in writing, giving the reasons therefore.
 - 2. Contractor shall remedy the deficiencies in the Work, and send a second written notice of substantial completion to the Engineer.
 - 3. The Engineer will reinspect the Work.
- D. When the Engineer determines that the Work is Substantially Complete, he will:
 - 1. Prepare a tentative Certificate of Substantial Completion with a tentative list of items to be completed or corrected before final payment.
 - 2. After consideration of any objections he will deliver to the Contractor a Certificate of Substantial Completion with a revised tentative list of items to be completed or corrected.
 - 3. Issuance of the notice of substantial completion shall not relieve the Contractor of responsibility for finishing all work associated with the contract whether or not they are listed on the tentative list of items to be completed or corrected.

1.04 FINAL INSPECTION

- A. When Contractor considers the Work is complete, he shall submit written certification that:

1. Contract Documents have been reviewed.
 2. Work has been inspected for compliance with Contract Documents.
 3. Work has been completed in accordance with Contract Documents.
 4. Work is completed and ready for final inspection.
- B. The Engineer will make an inspection to verify the status of completion with reasonable promptness after receipt of such certification.
- C. Should the Engineer consider that the Work is incomplete or defective:
1. The Engineer will promptly notify the Contractor in writing, listing the incomplete or defective work.
 2. Contractor shall take immediate steps to remedy the stated deficiencies, and send a second written certification to the Engineer that the Work is complete.
 3. The Engineer will reinspect the Work.
- D. When the Engineer finds that the Work is acceptable under the Contract Documents, he shall request the Contractor to make closeout submittals.

1.05 CONTRACTOR'S CLOSEOUT SUBMITTALS TO ENGINEER

- A. Evidence of compliance with requirements of governing authorities.
- B. Provide Project Record Documents in accordance with requirements of Section 01720.
- C. Warranties and Bonds: In accordance with requirements of the General Conditions.
- D. Evidence of Payment and Release of Liens: To requirements of General and Supplementary Conditions.

1.06 FINAL ADJUSTMENT OF ACCOUNTS

- A. Submit a final statement of accounting to the Engineer.
- B. Statement shall reflect all adjustments to the Contract Sum:
 1. The original Contract Sum.
 2. Additions and deductions resulting from:
 - a. Previous Change Orders.
 - b. Allowances.
 - c. Unit Prices.
 - d. Deductions for uncorrected Work.

- e. Deductions for liquidated damages.
- f. Other adjustments.
- 3. Total Contract Sum, as adjusted.
- 4. Previous payments.
- 5. Sum remaining due.

1.07 FINAL APPLICATION FOR PAYMENT

- A. Contractor shall submit the final Application for Payment in accordance with procedures and requirements stated in the General Conditions.

1.08 FINAL CLEANING

- A. Final cleaning of an entire work area or a defined portion thereof shall be accomplished prior to determination of Substantial Completion.
 - 1. Contractor shall clean, sweep, and wash Work provided under the Contract, including finishes. Contractor shall leave the structures and Site in a complete and finished condition approved by the Engineer.
 - 2. Contractor shall remove debris including dirt, sand, and gravel from sewers, storm sewers, and hydraulic structures. Contractor shall wash and flush materials that can be transported hydraulically to the Owner's facilities. Prior to washing and flushing, Contractor shall remove all materials that could harm the Owner's facilities.
 - 3. Should Contractor not remove rubbish or debris or not clean the facilities and Site as specified above, the Owner reserves the right to have final cleaning done at the sole expense of the Contractor.
- B. The Contractor shall assume responsibility for cleaning all areas associated with the Contractor's ongoing activities until Final Completion is achieved.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01720

PROJECT RECORD DOCUMENTS

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. Maintain at the site for the Engineer one record copy of:
 - 1. Drawings.
 - 2. Specifications.
 - 3. Addenda.
 - 4. Change Orders and other modifications to the Contract.
 - 5. Field Orders or written instructions.
 - 6. Approved Shop Drawings, Product Data and Samples.
 - 7. Field Test records.

1.02 RELATED WORK

- A. Section 01050 – Field Engineering and Surveying
- B. Section 01300 – Submittals

1.03 MAINTENANCE OF DOCUMENTS AND SAMPLES

- A. Store documents and samples in field office apart from documents used for construction.
- B. File documents and samples in accordance with CSI/CSC format.
- C. Maintain documents in a clean, dry, legible condition and in good order. Do not use record documents for construction purposes.
- D. Make documents and samples available at all times for inspection by the Engineer.
- E. As a prerequisite for monthly progress payments, the Contractor is to exhibit the currently updated "record documents" for review by the Engineer and the Owner.

1.04 MARKING DEVICES

- A. Provide felt tip marking pens for recording information in the color code designated by the Engineer.

1.05 RECORDING

- A. Label each document "PROJECT RECORD" in neat large printed letters.
- B. Record information concurrently with construction progress.
 - 1. Do not conceal any work until required information is recorded.
 - 2. Project record drawings will be checked monthly prior to approval of monthly partial payment.
- C. Legibly mark drawings to record actual construction for:
 - 1. All stream stabilization.
 - 2. All underground piping with elevations and dimensions, changes to piping locations, horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements, actual installed pipe material, class, etc.
 - 3. Determine installed pipeline location from the construction baseline or from physical features shown on the Drawings. Show dimensions to nearest foot on project record documents.
 - 4. Field changes of dimension and detail.
 - 5. Changes made by Field Order or by Change Order.
 - 6. Details not on original contract drawings.
 - 7. Equipment and piping relocations.
- D. Specifications and Addenda; legibly mark each Section to record:
 - 1. Manufacturer, trade name, catalog number, and Supplier of each Product and item of equipment actually installed.
 - 2. Changes made by Field Order or by Change Order.
- E. Submittals: Shop Drawings, Product Data and Samples (after final review and approval):
 - 1. One record set of all submittals approved by the Engineer.

1.06 SUBMITTALS

- A. At project close-out, deliver Record Documents to the Engineer sealed by a Licensed Surveyor.
- B. Accompany submittal with transmittal letter in duplicate, containing:
 - 1. Date.
 - 2. Project title and number.

3. Contractor's name and address.
4. Title and number of each Record Document.
5. Signature of Contractor or his authorized representative.
6. As-built documents (Record drawings) shall be prepared and sealed by a Licensed Surveyor, submitted as three (3) hard-copy documents and two (2) electronic CAD versions.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01740

WARRANTIES AND BONDS

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. This Section specifies general administrative and procedural requirements for warranties and bonds required by the Contract Documents, including manufacturer's standard warranties on products and special warranties.

1.02 RELATED WORK

- A. Refer to Conditions of Contract for the general requirements relating to warranties and bonds.
- B. General closeout requirements are included in Section 01700 Project Closeout.
- C. Specific requirements for warranties for the work and products and installations that are specified to be warranted are included in the individual Sections of Division 2 through 16.

1.03 SUBMITTALS

- A. Submit written warranties to the Owner prior to the date fixed by the Engineer for Substantial Completion. If the Certificate of Substantial Completion designates a commencement date for warranties other than the date of Substantial Completion for the work, or a designated portion of the work, submit written warranties upon request of the Owner.
- B. When a designated portion of the work is completed and occupied or used by the Owner, by separate agreement with the Contractor during the construction period, submit properly executed warranties to the Owner within 15 days of completion of that designated portion of the Work.
- C. When a special warranty is required to be executed by the Contractor, or the Contractor and a subcontractor, supplier or manufacturer, prepare a written document that contains appropriate terms and identification, ready for execution by the required parties. Submit a draft to the Owner for approval prior to final execution.
- D. Refer to individual Sections of Divisions 2 through 16 for specific content requirements, and particular requirements for submittal of special warranties.
- E. At Final Completion compile two copies of each required warranty and bond properly executed by the Contractor, or by the Contractor, subcontractor, supplier, or manufacturer. Organize the warranty documents into an orderly sequence based on the table of contents of the Project Manual.
- F. Bind warranties and bonds in heavy-duty, commercial quality, durable 3-ring vinyl covered loose-leaf binders, thickness as necessary to accommodate contents and sized to receive 8-1/2-in by 11-in paper.

- G. Table of Contents: Neatly typed, in the sequence of the Table of Contents of the Project Manual, with each item identified with the number and title of the Section in which specified and the name of the product or work item.
- H. Provide heavy paper dividers with celluloid covered tabs for each separate warranty. Mark the tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product, and the name, address and telephone number of the installer, supplier and manufacturer.
- I. Identify each binder on the front and the spine with the typed or printed title "WARRANTIES AND BONDS", the Project title or name, and the name, address and telephone number of the Contractor, equipment supplier, or responsible principal.
- J. When operating and maintenance manuals are required for warranted construction, provide additional copies of each required warranty, as necessary, for inclusion in each required manual.
- K. When operating and maintenance manuals are required for warranted construction, provide additional copies of each required warranty, as necessary, for inclusion in each required manual.

1.04 WARRANTY REQUIREMENT

- A. Related Damages and Losses: When correcting warranted work that has failed, remove and replace other work that has been damaged as a result of such failure or that must be removed and replaced to provide access for correction of warranted work.
- B. Reinstatement of Warranty: When work covered by a warranty has failed and been corrected by replacement or rebuilding, reinstate the warranty by written endorsement. The reinstated warranty shall be equal to the original warranty with an equitable adjustment for depreciation.
- C. Replacement Cost: Upon determination that work covered by a warranty has failed, replace or rebuild the work to an acceptable condition complying with requirements of Contract Documents. The Contractor is responsible for the cost of replacing or rebuilding defective work regardless of whether the Owner has benefited from use of the work through a portion of its anticipated useful service life.
- D. Owner's Recourse: Written warranties made to the Owner are in addition to implied warranties, and shall not limit the duties, obligations, rights and remedies otherwise available under the law, nor shall warranty periods be interpreted as limitations on time in which the Owner can enforce such other duties, obligations, rights, or remedies.
- E. Rejection of Warranties: The Owner reserves the right to reject warranties and to limit selections to products with warranties not in conflict with requirements of the contract Documents.
- F. The Owner reserves the right to refuse to accept work for the project where a special warranty, certification, or similar commitment is required on such work or part of the work, until evidence is presented that entities required to countersign such commitments are willing to do so.
- G. Disclaimers and Limitations: Manufacturer's disclaimers and limitations on product warranties do not relieve the Contractor of the warranty on the work that incorporates the products, nor does it relieve suppliers, manufacturers and subcontractors required to countersign special warranties with the Contractor.

1.05 MANUFACTURER'S CERTIFICATIONS

- A. Where required, the Contractor shall supply evidence, satisfactory to the Engineer, that the Contractor can obtain manufacturers' certifications as to the Contractor's installation of equipment.

1.06 DEFINITIONS

- A. Standard Product Warranties are preprinted written warranties published by individual manufacturers for particular products and are specifically endorsed by the manufacturer to the Owner.
- B. Special Warranties are written warranties required by or incorporated in the Contract Documents, either to extend time limits provided by standard warranties or to provide greater rights for the Owner.

END OF SECTION

EQUIPMENT MANUFACTURER'S CERTIFICATE OF INSTALLATION TESTING AND INSTRUCTION

Client _____

Project _____

Contract No. _____

CDM No. _____

EQUIPMENT SPECIFICATION SECTION _____

EQUIPMENT DESCRIPTION _____

I _____, Authorized representative of
(Print Name)

(Print manufacturer's name)

hereby CERTIFY that _____
(Print equipment name & model w/serial No.)

installed for the subject project has (have) been installed in a satisfactory manner, has (have) been satisfactorily tested, is (are) ready for operation, and that Owner assigned operating personnel have been suitably instructed in the operation, lubrication, and care of the unit(s)
on Date _____ Time: _____ .

CERTIFIED BY: _____ DATE: _____
(Signature of Manufacturer's Representative)

OWNER'S ACKNOWLEDGEMENT OF MANUFACTURER'S INSTRUCTION

I (we) the undersigned, authorized representatives of the _____
_____ and/or Plant Operating Personnel have received classroom and hands on instruction on the operation, lubrication, and maintenance of the subject equipment and prepared to assume normal operational responsibility for the equipment:

_____ DATE: _____

_____ DATE: _____

_____ DATE: _____

_____ DATE: _____

SECTION 02050

DEMOLITION AND MODIFICATIONS

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. Furnish all labor, materials, equipment and incidentals required and demolish, modify, remove and dispose of work shown on the Drawings and as specified herein.
- B. Included, but not limited to, are demolition, modifications and removal of existing materials and equipment as necessary to install the new work as shown on the Drawings and as specified herein and to connect with existing work in an approved manner.
- C. Demolition, modifications and removals which may be specified under other Sections shall conform to requirements of this Section.
- D. This Section calls attention to certain activities necessary to maintain and facilitate operation during and immediately following construction and does not purport to cover all of the activities necessary. Exercise due concern for stormwater and sanitary sewer system operation and diligently direct all activities toward maintaining continuous operation of the existing system and minimizing operation inconvenience.
- E. Demolition includes:
 - 1. Demolition and removal of the following:
 - a. Wooden retaining wall structure
 - b. 6-foot-high wooden fence
 - c. Riprap, concrete, and other debris in the floodplain area
 - d. Concrete and Steel Bridge structure
 - 2. Demolition and removal of other ancillary items as necessary for construction of the proposed improvements as indicated on the Drawings.
 - 3. Hauling and Disposal of all demolition debris from the site and off-site disposal in conformance with all applicable laws and regulations.

1.02 RELATED WORK

- A. Section 01010: Summary of Work.
- B. Section 01110: Environmental Protection Procedures.
- C. Section 01300: Submittals.
- D. Section 02100: Site Preparation.
- E. Section 02200: Earthwork.

1.03 SUBMITTALS

- A. Submit, in accordance with Section 01300, a schedule of proposed methods and operations of demolition of the structures and modifications prior to the start of work. Include in the schedule the coordination of shutoff, capping and continuation of utility service as required.
- B. Furnish a detailed sequence of demolition and removal work.
- C. Before commencing demolition work, all modifications necessary to bypass the affected structures shall be completed. Actual work shall not begin until the Engineer has inspected, approved the modifications and provided written authorization for commencement of the demolition work.

1.04 JOB CONDITIONS

A. Protection

- 1. Execute the demolition and removal work to prevent damage or injury to structures, occupants thereof and adjacent features which might result from falling debris or other causes, and so as not to interfere with the use, and free and safe passage to and from adjacent structures.
- 2. Closing or obstructing of roadways, sidewalks and passageways adjacent to the work by the placement or storage of materials will not be permitted unless authorized by the Engineer and all operations shall be conducted with a minimum interference to traffic on these ways.
- 3. Erect and maintain barriers, lights, sidewalk sheds and other required protective devices.

B. Scheduling

- 1. Carry out operations so as to avoid interference with operations and work in the existing facilities.

C. Conditions of Structures

- 1. The Engineer assumes no responsibility for the actual condition of the structures to be demolished or modified.
- 2. Conditions existing at the time of inspection for bidding purposes will be maintained by the City insofar as practicable. However, variations within a structure may occur prior to the start of demolition work.

D. Repairs to Damage

- 1. Promptly repair damage caused to adjacent facilities by demolition operations at no additional cost to the City. Repairs shall be made to a condition at least equal to that which existed prior to construction.

E. Traffic Access

1. Conduct demolition and modification operations and the removal of equipment and debris in accordance with the Traffic Control Plans and to ensure minimum interference with roads, streets, walks both onsite and offsite and to ensure minimum interference with occupied or used facilities.

1.05 RULES AND REGULATIONS (NOT USED)

1.06 DISPOSAL OF MATERIAL

- A. Materials and items of equipment resulting from demolition shall become the Contractor's property and must be removed from the site at no additional cost to the City.
- B. The storage or sale of removed items on the site will not be allowed.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 GENERAL

- A. All materials and equipment removed from existing work shall become the property of the Contractor, except for those which the Engineer has identified and marked.
- B. Pollution Controls
 1. Use water sprinkling, temporary enclosures and other suitable methods to limit, to the lowest practical level, the amount of dust and dirt rising and scattering in the air. Comply with governing regulations pertaining to environmental protection.
 - a. Do not use water when it may create hazardous or objectionable conditions such as ice, flooding and/or pollution.
 - b. Clean adjacent structures, facilities, and improvements of dust, dirt and debris caused by demolition operations. Return adjacent areas to conditions existing prior to the start of the work.

3.02 SEQUENCE OF WORK

- A. The sequence of demolition and renovation of existing facilities shall be in accordance with the schedule submitted in accordance with Paragraph 1.03 above.

3.03 DEMOLITION

- A. Demolition shall be performed to the limits shown on the Drawings or, if no limits are shown, as directed by the Engineer.
- B. Wet down work during demolition operations to prevent dust from rising.
- C. Remove all demolition debris and prepare adjoining areas for installation of new pipelines.
- D. All demolition debris, including existing manholes and/or buried piping which must be demolished as part of the work, shall become the property of the Contractor and shall be

removed from the site and disposed of in accordance with all applicable Federal, State, and Local laws and regulations. Demolition debris shall not be used for fill or backfill.

- E. Blasting or the use of explosives will not be allowed for any demolition work.

3.04 ABANDONMENT

- A. Abandonment shall be performed to the limits shown on the Drawings or, if no limits are shown, as directed by the Engineer.

3.05 CLEAN-UP

- A. Remove from the site all debris resulting from the demolition operations as it accumulates. Upon completion of the work, all materials, equipment, waste and debris of every sort shall be removed and premises shall be left, clean, neat and orderly.

END OF SECTION

SECTION 02100

SITE PREPARATION

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. Furnish all labor, materials, and equipment required to perform all site preparation, complete as shown on the Drawings and as specified herein.
- B. Obtain all permits required for site preparation work prior to proceeding with the work, including clearing and tree removal.
- C. The areas to be cleared, grubbed and stripped shall be minimized to the extent possible for the scope of stream stabilization work and in consideration of the actual means and methods of construction used. No unnecessary site preparation within these areas shall be performed.

1.02 RELATED WORK

- A. Section 01110: Environmental Protection Procedures
- B. Section 02200: Earthwork
- C. Section 02276: Erosion and Sedimentation Control

1.03 SUBMITTALS

- A. Submit in accordance with Section 01300 copies of all permits required prior to clearing, grubbing, and stripping work.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 CLEARING

- A. Cut, remove, and dispose of all timber, trees marked on plans, stumps, brush, shrubs, roots, grass, weeds, rubbish and any other objectionable material resting on or protruding through the surface of the ground within the area of excavation.
- B. Preserve and protect all trees and other vegetation as designated on the Drawings or directed by the Engineer.

3.02 GRUBBING

- A. Grub and remove all stumps for trees marked for removal, roots in excess of 1-1/2-in in diameter, matted roots, brush, timber, logs, concrete rubble and other debris encountered that are exposed by grading.

- B. Refill all grubbing holes and depressions excavated below the original ground surface with common fill materials and compact to a density conforming to the surrounding ground surface in accordance with Section 02200.

3.03 STRIPPING

- A. Strip topsoil from all areas to be occupied by structures or to be excavated or filled.
- B. Topsoil shall be free from brush, trash, large stones and other extraneous material. Avoid mixing topsoil with subsoil.
- C. Stockpile and protect topsoil until it is used in landscaping, loaming and seeding operations. Contractor to dispose of surplus topsoil after all work is completed at no additional cost to the City.

3.04 DISPOSAL

- A. Cut tree trunks and limbs exceeding 4-inch in diameter and not salvaged for use as log vanes shall be cut into 4-foot lengths and removed and disposed by the Contractor at no additional cost to the City.
- B. Dispose of material and debris from site preparation operations by hauling such materials and debris to an approved offsite disposal area. No rubbish or debris of any kind shall be buried on the site.
- C. Burning of cleared and grubbed materials, or other fires for any reason will not be permitted.

3.05 PROTECTION

- A. Trees and other vegetation designated on the Drawings or directed by the Engineer to remain shall be protected from damage by all construction operations by erecting suitable barriers, guards and enclosures, or by other suitable means. Clearing operations shall be conducted in a manner to prevent falling trees from damaging trees and vegetation designated to remain and to the work being constructed and so as to provide for the safety of employees and others.
- B. Maintain protection until all work in the vicinity of the work being protected has been completed.
- C. Do not operate heavy equipment or stockpile materials within the branch spread of existing trees unless approved by the Engineer.
- D. Immediately repair any damage to existing tree crowns, trunks, or root systems. Roots exposed and/or damaged during the work shall immediately be cut off cleanly inside the exposed or damaged area. Cut surfaces shall be treated with an acceptable tree wound paint, and topsoil over the exposed root area.
- E. All dead and downed trees shall be removed as soon as practicable, but in any event shall be removed prior to completion of construction. Live trees shall be trimmed of all dead and diseased limbs and branches. All cuts shall be cleanly made at their juncture with the trunk or preceding branch without injury to the trunk or remaining branches.

- F. Restrict construction activities to those areas within the limits of construction designated on the Drawings, within public rights-of-way, and within easements provided by the City. Adjacent properties and improvements thereon, public or private, which become damaged by construction operations shall be promptly restored to their original condition, to the full satisfaction of the property owner.

END OF SECTION

SECTION 02140

WATER CONTROL AND DEWATERING

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. The Work of this Section consists of controlling surface water, site drainage, and storm flows during construction. Contractor is cautioned that the Work involves construction in and around an active stream channel and floodplain. This area is subject to frequent periodic inundation.
- B. The Contractor shall design, furnish, install, operate, monitor, maintain and remove a temporary dewatering system as necessary to lower and control water levels below subgrades of excavations to permit construction in the dry.
- C. The Contractor shall furnish, maintain, relocate as necessary, and remove temporary surface water control measures adequate to drain and remove surface water entering excavations.
- D. The Contractor shall collect and properly dispose of all discharge water from the water control and dewatering in accordance with the provisions of Section 01110.
- E. The Contractor shall repair damage caused by water control and dewatering system operations at the Contractor's expense.
- F. Following the required period of service, remove temporary by-pass pumping systems from site.
- G. Provide all maintenance including manufacturer recommended preventive maintenance and on-call repair services. Contractor shall provide repair services and/or replacement equipment 24 hours per day, seven days per week within 4 hours of being called.
- H. Should the Contractor elect to use diesel fuel for temporary by-pass pumping, the total storage quantity of fuel allowable onsite to operate the temporary pumps shall not exceed the sum of the individual fuel tank capacities furnished with each pump's diesel engine drive.

1.02 RELATED WORK

- A. Section 01110: Environmental Protection Procedures
- B. Section 01300: Submittals
- C. Section 02100: Site Preparation
- D. Section 02200: Earthwork
- E. Section 02276: Sediment and Erosion Control

1.03 DESIGN AND PERFORMANCE RESPONSIBILITY

- A. The Contractor shall be responsible for the proper design and execution of methods for controlling surface water.
- B. The Contractor shall be responsible for damage to properties, buildings or structures, sewers and other utility installations, pavements, and work that may result from his dewatering or surface water control operations.
- C. Design review and field monitoring activities by the Owner shall not relieve the Contractor of his responsibilities for ensuring that dewatering and drainage systems work properly.

1.04 SUBMITTALS

- A. In accordance with Section 01300, 14 calendar days prior to any dewatering activity is to begin, submit for review a Water Control and Dewatering Plan that details methods to be used by the Contractor for establishing instream conditions for construction of the stream channel and in-stream log structures pursuant to the construction drawings. Include location, height, and type of construction of any temporary dams or flow rerouting schemes; where, when, and for how long pumping is anticipated, etc.
- B. Submit, in accordance with Section 01300, the following:
 - 1. Basic plan showing the proposed pumping system layout including intake, pump, and discharge.

1.04 DEFINITIONS

- A. Where the phrase “in-the-dry” is used in these specifications, it shall be defined as no ponded water visible.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Onsite materials may be used within the limits of construction to construct temporary dams and berms. The materials such as plastic sheeting, sand bags, and storm sewer pipe may also be used if desired by Contractor.

2.02 SEDIMENT BAG

- A. Sediment bag shall be manufactured using a polypropylene nonwoven geotextile sewn into a bag with a double needle matching using a high strength thread.
- B. The dewatering bag shall be made of 10 oz non-woven geotextile sized according to pumping capacity.
- C. All structural seams shall be sewn with double stitch J type seams using a double needle machine with high strength thread.
- D. The seam strength shall withstand 100 lb/in using ASTM D-4884 test method.

- E. Each sediment bag shall have a fill spout large enough to accommodate a 4" discharge hose. Straps are attached to secure the hose and prevent pumped water from escaping without being filtered.
- F. Sediment bag properties shall be as in Table 1.

Table 1. Sediment Bag Properties

Property	Test	Method	Units	Test Results
Weight	ASTM	D-3776	oz/yd	8
Grab Tensile	ASTM	D-4632	lbs.	205
Puncture	ASTM	D-4833	lbs.	110
Flow Rate	ASTM	D-4491	gal/min/ft2	110
Permittivity	ASTM	D-4491	sec.-1	1.5
Mullen Burst	ASTM	D-3786	lbs. in2	350
UV Resistant	ASTM	D-4355	%	70
AOS % Retained	ASTM	D-4751	US Seive	80

2.03 GENERAL PUMPING EQUIPMENT

- A. The pumps, drives and controls shall be designed and built for 24-hour continuous service at any and all points within the required range of operation, without overheating, without cavitation, and without excessive vibration or strain. All parts shall be so designed and proportioned as to have the strength, stability and stiffness and be constructed to meet the specified requirements. Methods shall be provided for inspection, repairs, and adjustment.
- B. All necessary foundation bolts, nuts, and washers shall be furnished.
- C. Each piece of equipment shall be furnished with a nameplate (with embossed data) securely mounted to the body of the equipment. As a minimum, the nameplate for the pumps shall include the manufacturer's name and model number, serial number, rated flow capacity, head, speed and all other pertinent data. As a minimum, nameplates for drives shall include the manufacturer's name and model number, serial number, horsepower, speed, input voltage, amps, number of cycles and power and service factors.
- D. Refer to Section 01110 for noise limitations for the equipment.
- E. All equipment shall be suitable for outdoor operation under adverse weather conditions. Provide protection from freezing as required to maintain system operation.

PART 3 EXECUTION

3.01 GENERAL

- A. General: For all excavation, Contractor shall provide suitable equipment and labor to remove water, and shall keep the excavation dewatered so that construction can be performed in-the-dry. Water control shall be accomplished such that no damage is done to adjacent channel banks or structures. Contractor is responsible for investigating and familiarizing himself with all site conditions that may affect the Work including surface water, potential flooding conditions, level of groundwater, and the time of year the work is to be done. All excavations made as part of dewatering operations shall be backfilled with the same type material as was removed and compacted to 95 percent of Maximum Standard Proctor Density (ASTM D698) except where replacement by other materials and/or methods are required.
1. Contractor shall conduct his operation in such a manner that storm or other waters may proceed uninterrupted along their existing drainage courses. By submitting a bid, Contractor acknowledges that he has investigated the risk arising from such waters and has prepared his bid accordingly, and assumes all of said risk.
 2. At no time during construction shall Contractor affect existing surface or subsurface drainage patterns of adjacent property. Any damage to adjacent property resulting from Contractor's alteration of surface or subsurface drainage patterns shall be repaired by Contractor at no additional cost to the County.
 3. Contractor shall remove all temporary water control facilities when they are no longer needed or at the completion of the project.
 4. Pumps and generators used for dewatering and water control shall be quiet equipment enclosed in sound deadening devices.
- B. The Contractor shall control surface water such that excavation to final grade is made in-the-dry, and bearing soils are maintained undisturbed. All construction and backfilling shall proceed in-the-dry and flotation of completed portions of work shall be prohibited.
- C. Provide protection against flotation for all work.
- D. The impact of anticipated subsurface soil/water conditions shall be considered when selecting methods of excavation and temporary dewatering and drainage systems. Type of dewatering system, spacing of dewatering units and other details of the work are expected to vary with soil/water conditions at a particular location.
- E. At least 2 weeks prior to the start of construction in any areas of anticipated dewatering, submit to the Engineer for review a proposed initial plan for removal of water. Do not proceed with construction in any of these areas until the initial plan has been reviewed and commented upon by the Engineer. It is expected that the initial plan may have to be modified to suit the variable soil/water conditions to be encountered across the site. Dewater and excavate, at all times, in a manner, which does not cause loss of ground or disturbance to the pipe bearing soil or soil which supports overlying or adjacent structures.
- F. Water may be discharged to the existing channel immediately downstream of the work area unless effluent is observed to be turbid and is measured in the field using a portable turbidity meter to have turbidity equal to or greater than 50 NTU.
- G. Turbidity of discharge water shall be measured at a minimum frequency of once every two (2) hours when water appears turbid or as directed by the Engineer. Turbidity measurement shall

be performed in accordance with manufacturer's instructions using a portable turbidity meter approved by the Engineer.

- H. When turbidity equals or exceeds 50 NTU, the effluent shall be directed to a sediment bag prior to discharge.

3.02 SEDIMENT BAG

- A. To install sediment bag on a slope so incoming water flows downhill through Sediment bag without creating more erosion. Strap the neck of Sediment bag tightly to the discharge hose. To increase the efficiency of filtration, place the bag on an aggregate or haybale bed to maximize water flow through the surface area of the bag.
- B. Sediment bag is full when it no longer can efficiently filter sediment or allow water to pass at a reasonable rate. Flow rates will vary depending on the size of sediment bag, the type and amount of sediment discharged into sediment bag, the type of ground, rock or other substance under the bag and the degree of the slope on which the bag lies. Under most circumstances sediment bag will accommodate flow rates of 750 gallons per minute. Use of excessive flow rates or overfilling sediment bag with sediment will cause the bag to rupture or failure of the hose attachment straps. Sediment bag shall be replaced when 90% full to prevent failure.
- C. Dispose sediment bag as directed by the site engineer. If allowed, sediment bag may be cut open and the contents seeded after removing visible fabric. Sediment bag is strong enough to be lifted with optional straps if it must be hauled away. Off-site disposal may be facilitated by placing sediment bag in the back of a dump truck or flatbed prior to use and allowing the water to drain from the bag while in place, thereby eliminating the need to lift sediment bag.

3.02 SURFACE WATER CONTROL

- A. Surface water control generally falls into the following categories:
 - 1. Normal low flows along the channel.
 - 2. Storm/flood flows along the channel.
 - 3. Flows from existing storm drain pipelines.
 - 4. Local surface inflows not conveyed by pipelines.
- B. Control surface water runoff to prevent flow into excavations. Provide temporary measures such as dikes, ditches, and sumps.
- C. The Contractor shall conduct his operation in such a manner that storm waters may proceed uninterrupted through the stream channel and floodplain. By submitting a bid, the Contractor acknowledges that he has investigated the risk arising from such waters and has prepared his bid accordingly, and assumes all of said risk. Any damage done during storm flows to equipment, temporary or partially completed structures, and/or work or resulting from the Contractor's operations shall be repaired by the Contractor at his expense.
- D. The Contractor shall conduct his operation such that water control is maintained throughout the construction. It is the Contractor's responsibility to determine the pump sizing for surface water

drainage and dewatering. Contractor shall coordinate, evaluate, design, construct, and maintain temporary water conveyance systems. These systems shall not worsen flooding, alter major flow paths, or worsen flow characteristics during construction. Contractor is responsible to ensure that any such worsening of flooding does not occur. Contractor is solely responsible for determining the methods and adequacy of water control measures.

- E. At a minimum, Contractor shall be responsible for diverting the quantity of surface flow around the construction area so that the excavations will remain free of surface water for the time it takes to install these materials. Contractor is cautioned that the minimum quantity of water to be diverted is for erosion control and construction purposes and not for general protection of the construction site. It shall be Contractor's responsibility to determine the quantity of water that shall be diverted to protect his work from damage caused by stormwater.
- F. Contractor shall, at all times, maintain a flow path for all channels. Temporary structures such as berms, sandbags, pipeline diversions, etc., may be permitted for the control of channel flow, as long as such measures are not a major obstruction to flood flows, do not worsen flooding, or alter historic flow routes.
- G. Installation of sand bags, sheet and by-pass shall be in accordance with the approved erosion and sedimentation control plan in the Contract Documents or as directed by the Owner.
- H. The sandbag diversion structure shall be installed from upstream to downstream.
- I. The height of the sand bag diversion structure shall be a minimum of the depth of normal flows in the stream plus one foot, or shall be of sufficient height so as to provide a pool deep enough to maintain pumping operations.
- J. Sheeting shall overlap the sandbags such that the upstream portion covers the downstream sandbag face with at least an 18-inch overlap.
- K. Utilize dewatering device in accordance with VA E&S Standard and Specification 3.26 or sediment bag in accordance with the approved Erosion and Sediment Control Plan (ESC Plan) as specified in Section 02276 to control the discharge of sediment downstream.

3.03 SYSTEM OPERATION

- A. Perform all required maintenance on the equipment to maintain the system integrity and capacity as specified.
- B. Provide clean-up and disposal of contaminated material and reporting for all product spills.

3.04 EQUIPMENT REMOVAL

- A. At the completion of the dewatering operations, disconnect all temporary piping and remove all system components from the site. Restore the work site to its original condition, or as directed by the Owner.

END OF SECTION

SECTION 02200

EARTHWORK

PART 1 GENERAL

1.01 STATUTORY REQUIREMENTS

- A. All excavation, trenching, sheeting, bracing, etc shall comply with the requirements of OSHA excavation safety standards (29 CFR Part 1926.650 Subpart P) and State and local requirements. Where conflict between OSHA and State regulations exists, the more stringent requirements shall apply.

1.02 SCOPE OF WORK

- A. Furnish all excavation work, backfill, and grading; place and compact backfill and fill; and dispose of unsuitable, waste, and surplus materials as shown on the Drawings and as specified herein.
- B. Furnish all labor, materials, equipment, and incidentals required and perform installation of instream log structures and salvage and placement of streambed materials as shown on the Drawings and as specified herein.

1.03 RELATED WORK

- A. Section 02100: Site Preparation
- B. Section 02140: Water Control and Dewatering
- C. Section 02273: Log Vane
- D. Section 02276: Erosion and Sedimentation Control
- E. Section 02930: Upland Loaming and Seeding
- F. Section 02955: Stream and Wetland Stabilization And Planting

1.04 SUBMITTALS

- A. Submit to the Engineer, in accordance with Section 01300, the following information and as elsewhere specified in this Section:
 - 1. The proposed methods of construction and equipment proposed for use for excavation, filling, compaction and backfilling for the various portions of the work. The Contractor shall remain responsible for the adequacy and safety of the methods.
 - 2. Submit certifications from materials suppliers that all proposed materials meet the requirements specified herein.
 - 3. Field density test documentation of fill and backfill materials under structures and pavements shall be provided to the Engineer for review and approval.

1.05 REFERENCE STANDARDS

- A. American Society for Testing and Materials (ASTM)
 - 1. ASTM D422 - Standard Test Method for Particle-Size Analysis of Soils
 - 2. ASTM D698 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (ft-lbf/ft³ (600 kN-m/m³))
 - 3. ASTM D1556 - Standard Test Method for Density and Limit Weight of Soil in Place by the Sand Cone Method
 - 4. ASTM D2216 - Standard Test Method for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass
 - 5. ASTM D2922 - Standard Test Method for Density of Soil and Soil-Aggregate in Place by Nuclear Method (Shallow Depth)
 - 6. ASTM D2937 - Standard Test Method for Density of Soil in Place by Drive Cylinder Method
 - 7. ASTM D3017 - Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Method (Shallow Depth)
 - 8. ASTM D4318 - Standard Test Method for Liquid Limit, Plastic Limit and Plasticity Index of Soils
- B. Virginia Department of Transportation (VDOT) Road and Bridge Specifications, 2007.
- C. Where reference is made to one of the above standards, the revision in effect at the time of bid opening shall apply.

1.06 QUALITY ASSURANCE AND QUALITY CONTROL

- A. The existing elevations and contours shown on the Construction Drawings, cross sections, and profiles were surveyed in September, 2010. Existing elevations and grades may have changed since the original survey was completed due to stream erosion, sediment accretion, and fill. It is the Contractor's responsibility to confirm existing grades and adjust earthwork, as necessary, at no additional cost to the Owner.
- B. The Contractor shall engage a Quality Control Laboratory (QCL) to perform conformance tests and to perform quality control testing for field density, water content, and gradation during fill placement as needed to control the Contractor's operations or process for producing, mixing, placing and compacting earth fill, and/or other earthwork materials. Quality control tests for earthwork materials shall be performed by Contractor in accordance with Section 01410.
- C. At all structures, prior to the placement of bedding material, concrete work mats, structural fill or structural concrete, coordinate with the soils testing laboratory to verify the suitability of the existing subgrade soil and to perform in-place soil density tests as required to verify that the bearing capacity of the subgrade is sufficient.
- D. Prior to and during the placement of backfill and fill coordinate with the soils testing laboratory to perform in-place soil density tests to verify that the backfill/fill material has been compacted in accordance with the compaction requirements specified elsewhere. The Owner or the Owner's

representative may designate areas to be tested. The percent compaction requirements for earthwork will be evaluated as follows: The in-place density as compacted by the Contractor will be determined by the field density test using the sand-cone method, drive cylinder method, or the nuclear method. The maximum dry density of the fill at the location of the in-place density test will be estimated using a one-point compaction test and full-curve compaction tests (family of curves) of representative fill materials. Both the one-point compaction test and the full-curve compaction tests will be performed in accordance with ASTM D698.

1.07 DEFINITIONS

- A. Where the phrase "in-the-dry" is used in this Section, it shall be defined as an excavation subgrade that is stable with no ponded water, mud, or muck and shall be able to support construction equipment without rutting or disturbance and shall be suitable for the placement and compaction of fill material or foundation stone.
- B. Where used in this Section "structures" refers to the log cross vane structures.
- C. Suitable Material: Material which does not contain organic silt or organic clay, peat, vegetation, wood or roots, stones or rock fragments over 6-inch in diameter, porous biodegradable matter, loose or soft fill, excavated pavement, construction debris, or refuse.
- D. Unsuitable Material: Material that does not comply with the requirements of suitable material or cannot be compacted to specified or indicated density.
- E. Undercut Excavation: Undercut excavation shall consist of the removal and satisfactory disposal of all unsuitable material located below subgrade elevation. Where excavation to the finished grade section results in a subgrade or slopes of muck, peat, matted roots, etc., the Contractor shall remove such material below the grade shown on the plans or as directed; and areas so excavated shall be backfilled with approved select borrow.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Contractor shall be responsible for furnishing materials that meet the specifications. The Contractor shall assess the suitability of on site materials and submit such information to the Owner as specified in 1.05D. Contractor shall be responsible to import additional materials required to complete construction.

- B. Topsoil

Refer to Section 02930: Upland Loaming and Seeding and Section 02955: Stream and Wetland Stabilization and Planting for applicable topsoil.

- C. Common Fill

- 1. Common fill shall be an approved on-site excavated material or imported fill that is durable soil and rock material free of debris, organic matter, or other deleterious materials, and meets the specified gradation requirements.
 - 2. Common fill shall not contain stones larger than three inches in diameter and shall have a minimum of 80 percent passing the No. 4 sieve and a minimum of 25 percent and a maximum of 80 percent passing the No. 200 Sieve. The maximum liquid limit and plasticity index of the material passing the U.S. Standard No. 40 sieve shall be 50 and 30 percent, respectively, when tested in accordance with ASTM D4318. Some mixing of borrow materials may be necessary to achieve this requirement.

3. Common fill shall not contain granite blocks, broken concrete, masonry rubble or other similar materials. It shall have physical properties such that it can be readily spread and compacted during filling. Snow, ice, and frozen soil will not be permitted.
- D. Select Fill shall conform to the requirements of common fill except that the material shall not contain any materials larger than two inches in largest dimension.
- E. Structural Fill shall be granular fill that have a plasticity index of less than 15 percent, a dry density of greater than 95 pcf, and shall conform to the following gradation limits:

<u>Sieve Size</u>	<u>Percent Finer By Weight</u>
3-inch	100
0.75-inch	75 to 100
No. 4	20 to 70
No. 40	5 to 35
No. 200	0 to 7

F. Stream Bed Material

1. Native soils or furnished mixture shall be used as stream bed materials meeting the following particle size distribution:
 - a. 50% - Salvaged coarse bed materials consisting of 0.1 to 1-inch sized native loam materials salvaged from the site excavation free of organic materials or debris of any kind.
 - b. 25% - Course sand
 - c. 25% - Gravel consisting of 0.1 to 0.5-inch sized clean washed stone
2. Where fill is required to establish the stream bed grade as shown on the plans, soils salvaged from elsewhere on site and conforming to the following criteria shall be used.

2.02 CONFORMANCE TESTING

- A. Conformance testing shall be conducted by the Contractor on fill materials prior to their use on the project. The following tests shall be conducted on the fill at the indicated frequencies:

<u>Test</u>	<u>Method</u>	<u>Frequency</u>
Grain Size	ASTM D422	Every 500 cy or change in material
Atterberg Limits	ASTM D4318	Every 500 cy or change in material
Moisture/Density	ASTM D698	Every 500 cy or change in material
Natural Moisture	ASTM D2216	Every 500 cy or change in material

The grain size conformance test and frequency listed above also apply to crushed stone.

Results of the tests shall be submitted to the Engineer within 24 hours of test completion and prior to material use on the project. The Engineer reserves the right to reject material based on the results of these conformance tests and/or independent quality assurance testing conducted by the QAL. Rejected materials shall be removed from the site at no cost to the Owner.

PART 3 EXECUTION

3.01 PREPARATION

A. Dewatering and Drainage Systems

1. Temporary dewatering, diversion channels, and pump-around systems shall be in place and operational prior to beginning excavation work.

B. Utilities

1. The Contractor shall field-verify by excavation the location of all utility crossings, service connections, and connections to existing lines before proceeding with excavation.

3.02 BANK EXCAVATION

- A. Excavate to the grades and slopes shown on the Drawings and/or staked in the field. Provide roundings at top and bottom of banks and otherwise provide smooth transitions to existing grades.

- B. Contractor shall be responsible for proper disposal of all excess material generated by Work.

3.03 CHANNEL EXCAVATION

- A. Excavate to lines, grades, and elevations indicated or staked in the field to place log vane structure anchor rocks. Bedding is to be compacted with mechanical equipment as described in 3.11.

- B. Where the new stream channel bed is constructed through existing soil, the in-situ soils shall not be over excavated.

- C. The earth must be completely removed to firm material and proper backfill placed before construction of log vane structures can proceed in accordance with Section 02273: Log Vane.

3.04 SALVAGE AND PLACEMENT OF STREAM BED MATERIALS

- A. When proper sediment and erosion control measures and the pump around are in place and functioning and prior to stream excavation, streambed materials shall be harvested from the existing channel. Streambed materials shall be removed to an approximate depth of 1foot. No excavation shall occur below the streambed materials into the underlying consolidated soils where a new channel is not being excavated.

- B. Salvaged streambed materials shall be transported and placed in the newly excavated channel or stockpiled in separate storage piles and kept separated from other materials. A layer of salvaged streambed materials with a minimum thickness of 6 inches shall be applied to the excavated channel bottom to raise the bed to final grade except in pools immediately downstream of log vanes; or in constructed riffles; or as otherwise directed by the Engineer. Salvaged stream bed materials are to be compacted with mechanical equipment as described in 3.11.

3.05 TOPSOIL

Refer to Section 02930: Upland Loaming and Seeding and Section 02955: Stream and Wetland Stabilization and Planting for applicable topsoil specification.

3.06 EXCAVATION SUPPORT

- A. Furnish, install, monitor, and maintain excavation support (e.g., shoring, sheeting, bracing, trench boxes, etc.) as required by Federal, State, or local laws, ordinances, regulations and safety requirements. Support the sides of excavation to prevent any movement which could in any way reduce the width of the excavation below that necessary for proper construction and protect adjacent structures from undermining, settlement or other damage. Take care to prevent the formation of voids outside of sheeting. If voids occur behind sheeting, immediately backfill and compact the voids with common fill material. Voids in locations that cannot be properly compacted upon backfilling shall be filled with lean concrete.
- B. Install excavation supports outside the neat lines of foundations. Supports shall be plumb and securely braced and tied in position. Excavation support shall be adequate to withstand all pressures to which the supports will be subjected. Any movement or bulging of supports shall be corrected to provide the necessary clearances, dimensions, and structural integrity.
- C. Excavation supports shall be carefully removed in such manner so as not to endanger the Work or other adjacent structures, utilities, or property. All voids left or caused by withdrawal of supports shall be immediately filled with sand and compacted.

3.07 EXCAVATION PROCEDURES

- A. Excavations for log vanes shall be suitably wide for construction, including excavation supports, dewatering and drainage systems, and working clearances.

3.08 GENERAL FILLING AND GRADING PROCEDURES

- A. Rough grading shall be done as soon as all excavation required in the area has been backfilled. The necessary earthwork shall be accomplished to bring the existing ground to the desired finish elevations leaving space for the specified layer of topsoil as shown on the Contract Drawings or otherwise directed.
- B. Loosening of compacted soils or amending poorly drained subsoils:
 - i. Loosen subgrade with a backhoe bucket to a depth of 18 inches. After gathering subsoil in backhoe bucket, drop soil onto the ground from a height of 6 feet to break up soil clumps. Position backhoe during work to prevent re-compaction of soils by beginning the work in corners or against walls, or the center of isolated beds, and progressing outward towards the borders.
 - ii. After subgrade has been broken up, rototill entire area to a minimum depth of 8 inches. The Contractor shall place barricades as required to prevent any unnecessary compaction of soil from vehicles, equipment, or personnel.
- C. Fine grading shall consist of shaping the final contours with topsoil for drainage and removing all large rock, clumps of earth, roots and waste construction materials. It shall also include thorough loosening of the soil to a depth of 6-inches by plowing, discing, harrowing or other approved methods until the area is acceptable as suitable for subsequent seeding and planting operations. The work of seeding and planting shall be performed immediately upon completion of earthwork within the specified season.

3.09 FILL AND BACKFILL PROCEDURES AROUND STRUCTURES

- A. Fill and backfill material placed immediately adjacent to and within 10 feet of all structures shall be select fill. Place and compact select fill in even lifts having a maximum thickness (measured before compaction) of 8 inches uniformly around the structure.
- B. Common fill may be used in areas beyond those designated for select fill unless shown or specified otherwise. Common fill shall be placed in even lifts having a maximum thickness (measured before compaction) of 12 inches.

3.10 EMBANKMENT FILL PROCEDURES

- A. Prior to placing embankment fill materials, all organic materials (including peat and loam) and loose inorganic silt material (loess) shall be removed from areas beneath the embankments. If the subgrade slopes are excessive, the subgrade shall be stepped to produce a stable, horizontal surface for the placement of embankment materials. The existing subgrade shall then be scarified to a depth of at least 6 inches.
- B. Embankment fill shall consist of common fill material and shall be placed and compacted in even lifts (measured before compaction) of a maximum of 12 inches.

3.11 COMPACTION REQUIREMENTS

- A. Roads and paved areas requiring repairs: Compact the top 12 inches of existing subgrade and each layer of fill or backfill to a minimum of 98 percent standard Proctor (ASTM D698) at or near its optimum moisture content (minus 2 to plus 3 percent).
- B. Salvaged and furnished streambed materials placed in the stream bed shall be compacted with the bucket of a trackhoe or similar heavy equipment.
- C. To prevent compaction of wetland soils, heavy equipment shall only be used in wetland areas as needed to perform demolition and grading work without additional transit or parking. Heavy equipment shall be parked outside the wetland area on the west side of the construction site. Heavy equipment shall not be used or transit over topsoil once laid in accordance with Sections 02930 and 02955.

3.12 DISPOSAL OF UNSUITABLE, WASTE AND/OR SURPLUS EXCAVATED MATERIAL

- A. Unsuitable, waste and surplus excavated material shall be removed and disposed of off-site at locations with all proper Federal, State, and local permits. Materials may be temporarily stockpiled in an area within the limits of construction that does not disrupt construction activities, create any nuisances or safety hazards, or otherwise restrict access to the work site.

3.13 GRADING

- A. Grading tolerances of finished surface shall conform to the lines, grades, and typical cross sections shown on the plans and shall be within 0.2 feet of required corresponding elevations. Changes in grade shall be accomplished by smooth curves. All objectionable material encountered within the limits indicated shall be removed and disposed of. Subgrades shall be completely and continuously drained and dewatered throughout the grading process. Install temporary drains, drainage ditches, etc., to intercept or divert surface water which may affect the execution or condition of grading work.

- B. If at the time of grading it is not possible to place any material in its proper section of the Work, it shall be stockpiled in approved areas for later use. No extra payment will be made for the stockpiling or double handling of excavated material.
- C. Stones or rock fragments larger than 4 inches in their greatest dimensions will not be permitted within the top 6 inches of the finished grade of fills and embankments.
- D. In cut areas, all loose or protruding rocks in slopes shall be removed to line or finished grade of the slope. All cut and fill slopes shall be uniformly dressed to the slope, cross-section and alignment shown on the Drawings unless otherwise directed by the Owner.

3.14 RESTORATION

- A. Restore all existing structures outside scope of construction as shown on plans to conditions equal or exceeding pre-work condition.
- B. Restore all finished grade surfaces to conditions equal to or exceeding pre-work conditions and as specified in Section 02900.

3.15 CLEANUP

- A. Prior to final inspection and acceptance, remove all rubbish and excess materials and leave the area in a neat, satisfactory condition that equals or exceeds its preconstruction condition.

3.16 SHRINKAGE AND MAINTENANCE

- A. Contractor shall be responsible for the stability of all embankments until final acceptance, and for replacing any portions that have become displaced due to carelessness or negligence or due to damage resulting from natural causes.
- B. Contractor shall be responsible until final acceptance for replacing surface soils that have become displaced through consolidation and filling of voids in underlying material stripped off due to loss of water control.

END OF SECTION

SECTION 02236

SIGNAGE

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. Furnish all labor, materials, equipment and incidentals required and install signage as specified and scheduled herein.
- B. The types to be furnished are as follows:
 - 1. Site signs, identification and directional.

1.02 RELATED WORK

- A. None.

1.03 SUBMITTALS

- A. Submit, in accordance with Section 01300, shop drawings showing details of construction and erection. Submittals shall include the following:
 - 1. Manufacturer's complete color range and type styles.
 - 2. Sign layout with shop drawings as follows:
 - a. Scale layout of all site signs.
 - b. Full size layout of typical Conservation Area Signs.
 - 3. Submit two each of the following samples. Samples shall be resubmitted as required until approved.
 - a. A 12-in minimum square sample of proposed encapsulated Site Sign with subsurface graphics and 12-in mounting post and spacer attached.
 - b. A 6-in minimum square sample of proposed pressure sensitive vinyl for Conservation Area cut into letters in the colors proposed for the required color scheme.
 - 4. Cleaning and maintenance instructions for all signage components.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Signs shall be manufactured by Architectural Signing Inc., Marina del Ray, CA; Architectural Graphics Inc., Norfolk, VA; Metal Art, Boston, MA or equal. Catalog numbers indicated are those of Architectural Signing Inc., (ASI) unless otherwise indicated. All lettering shall be Optima Bold, upper and lower case and sized as specified or as shown on scale sign drawings. All exposed surfaces shall be matte finish as approved.
- B. Site Signs
 - 1. For bidding purposes text and composition of site signs shall be as shown on attached sign drawings. Final text and composition shall be as shown on approved shop drawings. Signs shall be located as shown.
 - 2. Signs shall be provided in blue background and white letter color with reflective finish as approved and shall have upper and lower case letters with ASI A3000 arrows where required.
 - 3. Signs shall be ASI GOR construction, 812 Series mounting, 3-in thick panel consisting of 1/8-in thick opaque fiberglass permanently laminated to both sides of an extruded aluminum perimeter frame to form a seamless unit. Faces shall be reinforced with rigid core material as approved to prevent surface deflection and warping.
 - 4. Graphics shall be subsurface within the fiberglass panel. Panel shall contain U.V. inhibitors within the fiberglass and shall be factory top coated with clear matte finish polyurethane containing additional U.V. inhibitors.
 - 5. Sign support posts 3-in square shall be black anodized aluminum. Provide aluminum spacer between post and sign as designed by ASI for this sign series and as approved. Aluminum in contact with concrete shall be coated with an approved alkali resistant paint before setting. Provide approved corrosion resistant mounting hardware as required and approved.
 - 6. Site signs shall be designed to withstand wind loading of 30 psf without damage or permanent deflection.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Signage shall be installed at the locations detailed or as directed, in accordance with the manufacturer's recommendations and approved shop drawings.
- B. Posts for site signs shall be shop mounted on base plates and installed on 12-in by 12-in by 3.5-ft deep footings constructed of 2500 psi concrete as specified in Section 03300 and secured with nuts on anchor bolts furnished under this Section and cast into the concrete. Peen-over bolt threads to prevent removal as directed. Set concrete to provide bottom of base plate at 6-in below grade.
- C. Damaged units or components shall be removed and replaced at no additional cost to the Owner.

- D. Signage shall be cleaned to the satisfaction of the Engineer using the approved methods, upon completion of the installation and again, just prior to acceptance of the project.

END OF SECTION

SECTION 02271

RIPRAP

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. Furnish all labor, materials, equipment and incidentals required and place riprap and appurtenances as shown on the Drawings and as specified herein.

1.02 RELATED WORK

- A. Section 02140 Water Control, Dewatering and Drainage
- B. Section 02200: Earthwork
- C. Section 02275: Filter Fabric

1.03 REFERENCE STANDARDS

- A. Virginia Department of Transportation (VDOT) Drainage Manual, 2014
- B. VDOT Road and Bridge Specifications, 2007
- C. Where reference is made to one of the above standards, the revision in effect at the time of bid opening shall apply.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Riprap used for channel and slope protection shall be hard, durable, angular in shape, resistant to weathering and may be naturally occurring particles or fragments of natural stone (see Drawings for specific VDOT classification). Control of gradation shall be by visible inspection. Rounded stones, boulders, sandstone, or similar soft stone or relatively thin slabs will not be acceptable.
- B. Concrete rubble, masonry, shale, or other materials not meeting paragraph 2.1 may not be used for riprap.
- C. Gradation requirements for riprap shall be as shown on Table 1:

Table 1
Graded Riprap – Weight Analysis

Riprap Class/Type	Weight Range (lbs)	Requirements for Stone Mixture
Class AI	25-75	Max. 10% > 75 lbs.
Class I	50-150	60% > 100 lbs.
Class II	150-500	50% > 300 lbs.
Class III	500-1,500	50% > 900 lbs.

Note: From VDOT Road and Bridge Specifications 2007

Table 2
Standard VDOT Riprap Classifications

Weights, and Blanket Thickness Classification	D50 (ft)	W50 (lbs)	T (in)
Class AI	0.8	50	20
Class I	1.1	100	26
Class II	1.6	300	38
Class III	2.2	1000	53
Type I	2.8	2000	60
Type II	4.5	8000	97

Note: From Virginia Drainage Manual 2010

Table 3
Approximate Rock Dimensions and Equivalent Weights for Riprap

Weight	Mean Spherical Diameter	Rectangular Shape	
		Length	Ht./width
25 lbs.	0.7'	1.1'	0.4'
50 lbs.	0.8'	1.4'	0.5'
75 lbs.	1.0'	1.6'	0.5'
100 lbs.	1.1'	1.75'	0.6'
150 lbs.	1.3'	2.0'	0.67'
300 lbs.	1.6'	2.6'	0.9'
500 lbs.	1.9'	3.0'	1.0'
1000 lbs.	2.2'	3.7'	1.25'
1500 lbs.	2.6'	4.7'	1.5'
2000 lbs.	2.75'	5.4'	1.8'
2 tons	3.6'	6.0'	2.0'
3 tons	4.0'	6.9'	2.3'
4 tons	4.5'	7.6'	2.5'
10 tons	6.1'	10.0'	3.3'

Note: From Virginia Drainage Manual 2010

Approximate weight assumes spherical shape, which more closely approximates the weight of the individual stone.

- D. Neither the breadth nor thickness of a single rock shall be less than 1/3 of its length. Rounded stone shall be avoided.
- E. Unless otherwise noted on the Drawings, riprap shall be placed in the following minimum thicknesses listed in Table 4 (not including bedding thickness):

Table 4
Riprap Layer Thickness

Riprap Designation	D50 (Inches)	Minimum Riprap Layer Thickness (Inches)
Class AI	6	12
Class I	9	16
Class II	12	21
Class III	18	32

The Drawings may require thicker minimum thicknesses, particularly at laydown toes or scour holes.

PART 3 EXECUTION

3.01 WATER CONTROL

- A. Prior to commencing work on boulder, rock, and riprap placement, install water control measures as required to perform work in dry conditions. Water control measures shall include, but are not limited to, diversions, sheet pile, sumps with pumps, or other means necessary to maintain the level of surface water below subgrade elevation and to divert surface water away from the work area. The Contractor is responsible for investigating and familiarizing himself with respect to all site conditions that may affect the work, including surface water, level of groundwater, and time of year the work is to be done.

3.02 INSTALLATION

- A. The construction methods, compaction equipment, and appurtenances for gravel shall be in accordance with Virginia Department of Transportation Standard Specifications.
- B. Riprap and gravel shall be placed to the limits and grades shown on the Drawings.
- C. Channel slopes, bottoms, or other areas that are to be protected with riprap shall be free of brush, trees, stumps, and other objectionable material and be graded to a smooth compacted surface. Contractor shall excavate areas to receive riprap to the subgrade for granular bedding. The subgrade for bedding materials shall be stable. If unsuitable materials are encountered, they shall be removed and replaced in accordance with Section 02200 of the specifications. Unsuitable materials shall be disposed of from the site by Contractor at his expense. After an acceptable subgrade for granular bedding material is established, the filter fabric and bedding shall be immediately placed and leveled to the subgrade elevation. Immediately following this, the riprap shall be placed. If bedding material is disturbed for any reason, it shall be replaced and graded at Contractor's expense. In-place bedding materials shall not be contaminated with soils, debris, or vegetation before the riprap is placed. If contaminated, the bedding material shall be removed and replaced at Contractor's expense.

3.03 PLACEMENT

- A. A gravel base shall be placed and graded to a depth of 6-in to obtain a continuous uninterrupted bed of the required thickness within the required limits. See Section 02200 for gravel material.
- B. Riprap shall be placed and graded off in a manner to ensure that the larger rock fragments are uniformly distributed and that the smaller rock fragments serve to fill the spaces between the larger rock fragments in a manner that will result in a compact mass of stone of the specified thickness. Hand placing will be required only to the extent necessary to secure the results specified above.
- C. Riprap shall have a minimum thickness as indicated on the Drawings with individual pieces at the surface having a maximum deviation of plus or minus 2-inch.
- D. Placing of riprap in layers or by dumping into chutes or by similar methods to cause segregation will not be permitted.
- E. Following acceptable placement of granular bedding and riprap placement shall commence as follows:
 - 1. Machine Placed Riprap: Riprap shall be placed on the prepared slope or channel bottom areas in a manner that will produce a reasonably well-graded mass of stone with the minimum practicable percentage of voids. Riprap shall be machine placed, unless otherwise stipulated in the Drawings or specifications.
 - a. When riprap is placed on slopes, placement shall commence at the bottom of the slopes working up the slope. Place the riprap in a stepped fashion with the bottom of the uphill riprap below the top of the downhill riprap by half of the height of the riprap minimum.
 - b. The entire mass of riprap shall be placed on either channel slopes or bottoms so as to be in conformance with the required gradation mixtures and to lines, grades, and thickness shown on the Drawings. Riprap shall be placed to its full course thickness at one operation and in such a manner as to avoid displacing the underlying bedding material.
 - c. All material going into riprap protection for channel slopes or bottoms shall be so placed and distributed that there will be no large accumulations of either the larger or smaller sizes of stone. Some hand placement may be required to achieve this distribution.
 - d. It is the intent of these specifications to produce a fairly compact riprap protection in which all sizes of material are placed in their proper proportions. Unless otherwise authorized by the Engineer, the riprap protection shall be placed in conjunction with the construction of embankments or channel bottoms with only sufficient delay in construction of the riprap protection, as may be necessary, to allow for proper construction of the portion of the embankment and channel bottom that is to be protected. Contractor shall maintain the riprap protection until accepted. Any material displaced for any reason shall be replaced to the lines and grades shown on the Drawings at no additional cost to Owner. If the bedding materials are removed or disturbed, such material shall be replaced prior to replacing the displaced riprap.

2. Hand Placed Riprap: Hand placed riprap shall be performed during machine placement of riprap and shall conform to all the requirements of PART 2 above. Hand placed riprap shall also be required when the depth of riprap is less than two times the nominal stone size, or when required by the Drawings or specifications.
 - a. After the riprap has been placed, hand placing or rearranging of individual stones by mechanical equipment shall be required to the extent necessary to secure a flat uniform surface and the specified depth of riprap, to the lines and grades as shown on the Drawings.
3. Rejection of Work and Materials: The Engineer shall reject placed riprap that does not conform to this Section and Contractor shall immediately remove and relay the riprap to conform with said sections.
 - a. Riprap shall be rejected, which is either delivered to the job site or placed, that does not conform to this Section. Rejected riprap shall be removed from the project site by Contractor and at his expense.

END OF SECTION

SECTION 02273

LOG VANE

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. Furnish all labor, materials, supplies, equipment, tools, and incidentals to install log vane structures as shown on the Drawings and as specified herein. The work shall include, but not be limited to the following:
 - 1. Excavation and grading as required to build structures into the channel bed and banks.
 - 2. Maintenance of all structures.
 - 3. Final cleanup and all other work required to complete the job in accordance with the Drawings and Specifications.

1.02 RELATED WORK

- A. Section 02100: Site Preparation
- B. Section 02200: Earthwork
- C. Section 02275: Filter Fabric
- D. Section 02901: Miscellaneous Work and Cleanup

1.03 SUBMITTALS

- A. Submit all materials of construction and installation equipment for inspection and approval upon the request of the Owner in accordance with Section 01300 and 02275 for:
 - 1. Logs
 - 2. Anchors
 - 3. Filter Fabric

1.04 DEFINITIONS

- A. Thalweg: the deepest point of a channel cross section.
- B. Bankfull elevation: the defined top of the stream bank.
- C. DBH: (Diameter Breast Height) is the tree diameter at breast height above the ground when planted or above the root system when lying on the ground.

1.05 SITE CONDITIONS

- A. Protection: Determine location of all underground utilities prior to excavation.
- B. Existing Vegetation Protection: Minimize disturbance area to protect existing vegetation as outlined in Section 02100: Site Preparation.
- C. Sequencing: Coordinate installation of in-stream structures to ensure that damage will not occur while accessing or exiting channel. Install plants as soon as possible after final grades are established.

PART 2 PRODUCTS

2.01 MATERIALS

A. LOG

- 1. Log vane installation requires two lengths of a hardwood tree trunk for the header and footer logs. Trees and lengths for log vanes shall be selected by the Contractor and approved by the Owner from those on site to be removed. The cut logs for log vanes shall be protected and stockpiled until installation.
- 2. Logs shall consist of the trunk of a hardwood tree at least 12 inches DBH with a solid core. Logs shall have a length capable of extending 5 feet into the channel past the thalweg and a minimum of 5 feet into the bank beyond the bankfull elevation at the downstream end.

B. ANCHOR

- 1. Anchors shall consist of a bolt, cable (minimum length of four feet) and “duck bill anchor”. Bolt end shall have a nut and washer connection. Submit anchor specifications to the Engineer for approval. Manufactured home tie-down anchors or other soil anchor may be used pending approval of the Engineer.
- 2. The soil anchors shall have minimum pullout strength of 1,100 lbs and wire rope breaking strength shall be a minimum of 1,700 lbs. The pullout strength shall be based on soil types, anchor depths, and specific anchor. Consult manufacturer’s information for proper selection of anchors. The anchor, cables, and clamps shall be made of galvanized steel.

C. BACKFILL MATERIALS

- 1. Stream bed materials used for backfilling log vanes shall conform to Section 02200.

D. FILTER FABRIC

- 1. Filter fabric for sealing structures shall meet the material requirements of Section 02275 Filter Fabric.

PART 3 EXECUTION

3.01 GENERAL

- A. Dimensions: Before proceeding with any work, carefully check and verify all dimensions and quantities and immediately inform the Owner of any discrepancy between the Drawings and/or Specifications and actual conditions.

3.02 FOUNDATION PREPARATION

- A. Banks and bed shall be graded to rough grade prior to installation of in-stream structures.
- B. Actual placement locations may vary due to in-field conditions and as directed by the Engineer. In the event that bedrock, underground boulders, underground construction work, or obstructions are encountered in any pit excavation work under this Contract, alternate locations may be selected by the Engineer.
- C. In the event where installation of the log vane may damage roots of trees to be protected, excavation shall be minimized. This may include reducing the length of the vane or eliminating trenching for footer rocks and gravel tailings as determined by the Owner.
- D. If bedrock is present in the area of installation, footer rock shall still be required unless approval for elimination of footer rock is obtained from the Engineer. For example, where bedrock is friable and weathered and can be trenched, footer rock will be required. In areas where bedrock is resistant and blasting would be required, the Engineer shall determine whether or not to eliminate footer rock.
- E. Excavate a trench along the length of the log vane and a 2-foot area upstream along the stream bed and at least 6 feet into the bankfull elevation in the streambank for the log vane as shown in the Drawings.

3.03 INSTALLATION

- A. Contractor shall locate and install all logs, boulders/anchors, filter fabric, and fill material according to the Drawings and as described herein. Log vanes shall be installed with two offset logs buried in the stream bank and under the stream bed.
- B. The header log shall be placed on top of the footer log slightly offset in the upstream direction.
- C. The log vane shall be placed so that the intersection of the log and the channel thalweg match the station number on the profile. The log vane shall be placed so that the upstream end of the log is completely buried at the thalweg and extends a minimum of 5 feet under the stream bottom. The downstream end of the log shall be completely buried at the bankfull elevation and extend into the bank a minimum of 5 feet.
- D. The slope of the log vane from the bankfull elevation to the thalweg shall be between 2 and 7 percent. The angle of the log from the stream bank shall be between 20 and 30 degrees. One anchor boulder shall be placed on the upstream end of the vane log buried just below final grade.
- E. The trench behind the footer log shall be lined with filter fabric as shown in the Drawings then backfilled with on-site soils before vane rocks are set, taking care to fill all voids.

3.04 BACKFILLING AND FINISHING

- A. The trench behind the vane logs shall be backfilled, taking care to fill all voids underneath and between the vane logs.
- B. Stream bed materials shall be placed a minimum of 2 feet upstream of the log vane structure to a minimum depth of 2 times the log diameter. The stream bed materials shall be placed to the proposed invert elevation shown in the Drawings.

- C. Upon completion of work, reshape slopes and stream bottom to specified elevations. Excavate scour pool downstream of log vane as shown on the Drawings to approximately the top of the upstream end of the footer log.
- D. Remove surplus excavated materials to fill areas or approved offsite locations.

END OF SECTION

SECTION 02275

FILTER FABRIC

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. Furnish all labor, materials, equipment and incidentals required to install filter fabric complete as shown on the Drawings and as specified herein.

1.02 RELATED WORK

- A. Section 02200: Earthwork
- B. Section 02271: Riprap
- C. Section 02273: Log Vane
- D. Section 02276: Erosion and Sedimentation Control

1.03 SUBMITTALS

- A. Submit the following information in accordance with Section 01300:
 - 1. List of material properties and samples of filter fabric with attached certified test results.
 - 2. Manufacturer's quality control program and manual including description of laboratory facilities.
 - 3. Shop Drawing, including details of overlap, seaming, anchoring, connections and other construction details.
 - 4. Installation schedule.
 - 5. A manual that specifically defines the quality control and quality assurance program during installation including manufacturer's installation instructions.
 - 6. Copy of quality control certificates in conformance with Paragraph 2.02.

1.04 REFERENCE STANDARDS

Reference standards include, but are not limited to, the following:

- A. American Society for Testing and Materials (ASTM)
 - 1. ASTM D4355 - Standard Test Method for Deterioration of Geotextiles by Exposure to Light, Moisture and Heat in a Xenon Arc Type Apparatus.

2. ASTM D4491 - Standard Test Methods for Water Permeability of Geotextiles by Permittivity.
 3. ASTM D4632 - Standard Test Method for Breaking Load and Elongation of Geotextiles (Grab Method).
 4. ASTM D4751 - Standard Test Method for Determining Apparent Opening Size of a Geotextile.
 5. ASTM D4759 - Standard Practice for Determining the Specification Conformance of Geosynthetics.
 6. ASTM D4833 - Standard Test Method for Index Puncture Resistance of Geotextiles, Geomembranes and Related Products.
 7. ASTM D4873 - Standard Guide for Identification, Storage and Handling of Geosynthetic Rolls and Samples.
 8. ASTM D5261 - Standard Test Method for Measuring Mass Per Unit Area of Geotextiles.
- B. Where reference is made to one of the above standards, the revision in effect at the time of bid opening shall apply.

1.05 FABRIC APPLICATIONS

- A. The filter fabric is to be used beneath areas needing bedding or backfill, including riprap areas, in-stream vane structures and stacked stone revetment, except as otherwise noted on the Drawings. The unit weights of the filter fabric for each use are specified herein.

1.06 DELIVERY, STORAGE AND HANDLING

- A. Geotextile labeling, shipment and storage shall follow ASTM D4873.
- B. Product labels shall clearly show the manufacturer or supplier name, style name and roll number.
- C. Each shipping document shall include a notation certifying that the material is in accordance with the manufacturer's certificate.
- D. Each geotextile roll shall be wrapped with a material that will protect the geotextile from damage due to shipment, water, sunlight, and contaminants.
- E. The protective wrapping shall be maintained during periods of shipment and storage. If the wrapping is damaged prior to installation, the outer wrap of geotextile material must be discarded before installation.
- F. During storage, geotextile rolls shall be elevated off the ground and adequately covered to protect them from the following: Site construction damage, extended exposure to ultraviolet (UV) radiation, precipitation, chemicals that are strong acids or strong bases, flames, sparks, temperature in excess of 71 deg C (160 deg F) and any other environmental condition that might damage the geotextile.

1.07 GUARANTEE

- A. The Contractor shall guarantee the filter fabric against defects in installation and workmanship for the period of two years commencing with the date of Final Acceptance. The guarantee shall include the services of qualified service technicians and all materials required for the repairs at no expense to the Owner.

PART 2 PRODUCTS

2.01 GENERAL

- A. The use of a manufacturer's name and model or catalog number is for the purpose of establishing the standard of quality and general configuration.

2.02 MATERIALS

- A. Nonwoven Fabric

1. Filter fabric shall be new and without flaws or defects of any type.
2. All fabric shall be a nonwoven needle punched polypropylene fabric consisting of filaments formed into a stable network, such as Mirafi, Synthetic Industries, GSE or equal.
3. A nominal 8 oz/yd² unit weight fabric shall be used.
4. The fabric shall be nonbiodegradable, nonreactive within a pH range of three to eleven, resistant to ultraviolet light exposure, and resistant to insects and rodents. Test results from any sampled roll in the lot, when tested in accordance with ASTM D4759, shall meet or exceed the values listed in Table 1. All strength values are for the weaker principal direction.

TABLE 1
MINIMUM AVERAGE ROLL VALUES
FOR
GEOTEXTILE FABRICS

		MINIMUM AVERAGE ROLL VALUES	
PROPERTIES	TEST METHOD	UNIT	8 OZ.
Mass Per Unit Area	ASTM D5261	oz./yd ²	8.0
Grab Strength	ASTM D4632	Lbs	220
Grab Elongation	ASTM D4632	%	50
Puncture Strength	ASTM D4833	Lbs	120
Permittivity	ASTM D4491	sec ⁻¹	1.05
Apparent Opening Size	ASTM D4751	US Sieve	100
UV Resistance (500 hours)	ASTM D4355	% retained	70

2.03 QUALITY CONTROL DOCUMENTATION

- A. Prior to installation, the Contractor shall provide to the Owner the following information certified by the manufacturer for the delivered fabric.
1. Each roll delivered to the Project site shall have the following identification information:
 - Manufacturer's name
 - Product identification
 - Mass per unit area
 - Roll number
 - Roll dimensions

PART 3 EXECUTION

3.01 REQUIREMENTS PRIOR TO INSTALLATION

- A. Prior to the placement of the filter fabric, the subgrade shall be inspected and approved by the Engineer in accordance with Section 02200. The subgrade shall be smooth, uniform and compacted for the installation of the fabric.

3.02 INSTALLATION

- A. Fabric Placement

1. The filter fabric shall be installed as shown on the Drawings and in accordance with the manufacturer's recommendations and approved shop drawings.
2. The subgrade shall be maintained in a smooth, uniform and compacted condition during installation of the filter fabric.
3. Damage to the filter fabric occurring during placement shall be repaired immediately at no additional expense to the Owner.

B. Field Overlap

1. The fabric used shall be overlapped a minimum of 12-inches.

3.03 FILL COVER

A. Placement of Fill Cover Over Fabric

1. The cover shall be placed with mechanical equipment; however, no mechanical equipment shall be allowed directly on top of the fabric material. Equipment shall be driven on pre-deposited material.
2. Soil cover shall be brought in with earth-carrying equipment, deposited on the previously spread soil cover, then pushed onto the uncovered portion of the fabric with graders or bulldozers. This operation shall be repeated until the total area is covered.
3. Fill cover for the side slopes of the fabric shall be placed at the bottom and pushed up so as to reduce any tension on the fabric.
4. Damage to the fabric occurring during the placement of fill cover shall be repaired immediately at no additional expense.
5. Cover material shall be placed as soon as possible to protect materials from ultraviolet degradation and temperature fluctuations.

3.04 DISPOSAL OF WASTE MATERIAL

- A. On completion of installation, dispose of all trash, waste fabric and equipment used in connection with the work herein and shall leave the premises in a neat and acceptable manner, as approved by the Engineer.

3.05 FIELD QUALITY CONTROL

- A. The filter fabric installation and related work shall be inspected by the Engineer. All work in the system therein being inspected shall be complete, clean and ready for use. All work shall meet the requirements of cleanliness and workmanship, as determined by the Engineer.
- B. Discrepancies shall be noted and repaired at no additional expense. Final acceptance of the system shall be contingent upon the approval of the Engineer.

END OF SECTION

SECTION 02276

EROSION AND SEDIMENTATION CONTROL

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. The work specified in this Section consists of providing, maintaining and removing temporary erosion and sedimentation controls as necessary during construction.
- B. The work shown on the Drawings and specified herein is based on the anticipated construction methods, and includes the principal measures required. Additional erosion control measures may be required to prevent sedimentation and erosion resulting from the actual means, methods and techniques employed during construction. The Contractor shall provide and pay for all required erosion and sedimentation control measures in compliance with the requirements of the Virginia Erosion and Sediment Control Law, Regulations, and Certification Regulations as found in Title 10.1, Chapter 5, Article 4 of the Code of Virginia and Sections 4VAC30-50 and 4VAC50-50 of the Virginia Administrative Code.
- C. Furnish all labor, materials, equipment and incidentals required and perform all installation, maintenance, removal and area cleanup related to erosion and sedimentation control work as shown on the Drawings and as specified herein. The work shall include, but not necessarily be limited to; installation of temporary access ways and staging areas, silt fences, silt bags, sediment removal and disposal, device maintenance, removal of temporary devices, mulching, erosion control or turf reinforcement matting installation and final cleanup.
- D. The Contractor shall submit and obtain an amendment to the approved erosion and sedimentation control plan if any deviation to the plan is proposed prior to site implementation of the modified methods.

1.02 REFERENCE DOCUMENTS

- A. Virginia Erosion and Sediment Control Handbook
- B. Virginia Department of Transportation Road and Bridge Specifications (VDOTRBS), current edition, including addenda.

1.03 RELATED WORK

- A. Section 02100: Site Preparation
- B. Section 02140: Water Control and Dewatering
- C. Section 02200: Earthwork
- D. Section 02930: Upland Loaming and Seeding
- C. Section 02955: Stream and Wetland Stabilization and Planting

1.04 SUBMITTALS

A. Submit to Engineer the following information in accordance with Section 01300:

1. Product data for all erosion and sedimentation control materials.

1.05 QUALITY ASSURANCE

A. Be responsible for the timely installation and maintenance of all sedimentation control devices necessary to prevent the movement of sediment from the construction site to off site areas or into the stream system via surface runoff or underground drainage systems. Measures in addition to those shown on the Drawings necessary to prevent the movement of sediment off site shall be installed, maintained, removed, and cleaned up at the expense of the Contractor. No additional charges to the City will be considered.

PART 2 PRODUCTS

2.01 SILT FENCES

- A. Use a synthetic filter fabric of at least 95% by weight of polyolefins or polyester, which is certified by the manufacturer or supplier as conforming to the requirements in Table 3.05-B of the VA Erosion and Sediment Control Handbook.
- B. Synthetic filter fabric should contain ultraviolet ray inhibitors and stabilizers to provide a minimum of 6 months of expected usable construction life at a temperature range of 0 to 120° F.
- C. Ensure that posts for sediment fences are 1.33 lb/liner ft steel with a minimum length of 5 feet. Make sure that steel posts have projections to facilitate fastening the fabric.
- D. For reinforcement of standard strength filter fabric, use wire fence with a minimum 14 gauge and a maximum mesh spacing of 6 inches.

2.02 FILTER CLOTH

- A. Plastic filter cloth shall be woven of polypropylene monofilament yarns equivalent to Carthage 6% as manufactured by Carthage Mills.

2.03 STOCKPILE COVERS

- A. Polyethylene rolls 12-ft wide, 20 mils minimum thickness shall be used for stockpile covers.

2.04 CRUSHED STONE

- A. Crushed stone shall be VDOT No. 57 coarse aggregate, conforming to VDOT Standard Specifications for Roads and Structures. The aggregate shall consist of sound, durable stone, angular in shape, free from foreign material, structural defects and comparatively free of chemical decay. The grading shall conform to the following requirements:

Sieve Size	Percent Finer by Weight
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1-1/2-in	100
1-in	95 - 100
1/2-in	25 - 60
No. 4	0 - 10
No. 8	0 - 5

2.05 Temporary Erosion Control Matting

- A. Photo Degradable Erosion control blanket to be placed over all seeded sloped areas steeper than 4H:1V as shown on the Drawings, or as directed by the Engineer, shall consist of wood excelsior with 80% 6-inch fibers or greater fiber length with the top and bottom of the blanket covered with photo-degradable or biodegradable nettings such as Model S150 Double Net Short-Term Blanket (10 months) by North American Green, Curlex II by American Excelsior, or Landlok S2 by SI Geosolutions. Blanket shall be of consistent thickness with fibers evenly distributed throughout the entire area of the blanket. Blanket shall be recommended by manufacturer for use on slopes up to 2:1, stormwater velocities up to 5 fps, and flow shear stresses up to 2 lbs/sf. Install blanket in accordance with manufacturer's recommendations.

2.06 Natural Fiber Matting

- A. Natural fiber erosion control matting used on channel banks shall be 100 percent biodegradable woven coconut (coir) fiber with a minimum weight of 700 grams per square meter as determined by ASTM D3776 with an open area of no more than 50% and maximum opening size of ½ inch (12mm). The blankets shall be able to withstand flow velocities of up to 10 feet per second and shear stresses up to 2 lb/sq ft on unvegetated slopes and last for at least 24 months. Blankets shall have a tensile strength (dry) of no less than 100 lbs/ft (1.45 kN/m). Several manufacturers provide equivalent products for woven coir matting as specified:
 1. DeKoWe 700
 2. Bon Terra CF7
 3. RoLanka BioD-Mat 70
- B. Provide either "T" shaped hardwood stakes or biodegradable pins for anchoring seams and edges of the coir matting. Stakes must be 12" long for compacted soils and 12"- 24" long for looser soils with a 1" x 1" nominal square cross section. One end of the stake must be sharpened or beveled to facilitate driving through the coir fiber mat and down into the underlying soil. The other end of the stake needs to have a 1"- 2" long head at the top with a 1"- 2" notch following to catch and secure the coir fiber mat. If using wood stakes, use only ones that are solid, that will not split or crack, and are free of rot. Contractor may fabricate stakes or may purchase commercially available ones made specifically for the purpose of securing erosion control blankets.

2.07 DEWATERING BAG

- A. The dewatering bag shall be made of 10 oz non-woven geotextile sized according to pumping capacity.
- B. All structural seams shall be sewn with double stitch J type seams using a double needle machine with high strength thread.
- C. The seam strength shall withstand 100 lb/in using ASTM D-4884 test method.

PART 3 EXECUTION

3.01 GENERAL

- A. Construct temporary and permanent erosion control measures as shown on the Drawings. All erosion control work shall be constructed prior to ground disturbance in the affected area. Contractor shall clear only enough area to install erosion and sedimentation control measures. The construction sequence on the Contract Drawings shall be adhered to unless otherwise directed by the Engineer.
- B. All disturbed areas shall drain toward installed erosion and sedimentation control measures.
- C. Wherever construction vehicles enter or leave a construction site, a Stabilized Construction Entrance is required. Where sediment is transported onto a public road surface, the roads shall be cleaned thoroughly at the end of each day. Sediment shall be removed from roads by shoveling or sweeping and be transported to a sediment controlled disposal area. Street washing shall be allowed only after sediment is removed in this manner and approved by the Engineer.
- D. In the event of conflict between these requirements and erosion and pollution control laws, rules, or regulations of other federal, state, or local agencies, the more restrictive laws, rules, or regulations shall apply.

3.02 INSTALLATION

- A. All erosion and sedimentation control measures installed shall conform to the Virginia Erosion and Sediment Control Handbook, most recent edition.
- B. Sediment Fence Installation
 - 1. Sediment fences shall be positioned as indicated on the Drawings and as necessary to prevent off site movement of sediment produced by construction activities as directed by the Engineer.
 - 2. Dig trench approximately 6-in wide and 6-in deep along proposed fence lines.
 - 3. Drive stakes, 8-ft on center (maximum) at back edge of trenches. Stakes shall be driven 2-ft (minimum) into ground.
 - 4. Hang filter fabric on posts carrying to bottom of trench with about 4-in of fabric laid across bottom of trench. Stretch fabric fairly taut along fence length and maintain secure both ways.
 - 5. Backfill trench with excavated material and tamp.
 - 6. Install pre-fabricated silt fence according to manufacturer's instructions.
- C. Stone Filter Berm Installation
 - 1. Place berm structural stone across channel just below lower sandbag wall at work area. Face upstream side of structural berm with crushed stone.

E. Dewatering Bag (Silt Bag)

- a. Silt bag shall be placed outside of drainage flowpath so does not block flow during rain event.
- b. Dewatering bag shall be underlain with 3-inch thick temporary VDOT No. 57 stone aggregate underlayment to prevent erosion of soils.
- c. Discharge from the dewatering bag shall be directed back into the stream as shown on the drawings without causing erosion.
- d. Secure dewatering bag in place with stakes and rope to avoid rolling or floating.

3.03 SEDIMENTATION CONTROL

- A. Install and maintain all measures as required by the VESCL and VESCR.
- B. Stockpiles shall be protected from transfer of material due to erosion by providing sedimentation controls along the toe of the slopes, seeding the side slopes (with the exception of sand or clay which shall be covered with plastic), slope downdrains for long, steep slopes, and by maintaining stable slopes.
- C. Contractor shall clear and/or grub only enough area to install erosion and sedimentation control measures. Silt fence shall be installed as needed to insure against off-site runoff until all diversion structures are constructed and operational. Contractor is responsible for preventing migration of sediment into wetland areas, rivers, streams and adjacent properties during construction. All disturbed areas shall drain toward installed erosion and sedimentation control measures. Engineer may stop all work on the project if a Notice of Violation is issued by the Virginia Department of Conservation and Recreation (DCR) relating to Contractor's work, and such stoppage shall remain in effect until such violations are corrected to the satisfaction of the DCR.

3.04 MAINTENANCE AND INSPECTIONS

- A. Make a visual inspection of all erosion and sedimentation control devices daily and promptly after every rainstorm. If such inspection reveals that additional measures are needed to prevent movement of sediment to offsite areas, promptly install additional devices as needed. Sediment controls in need of maintenance shall be repaired promptly.
- B. Contractor shall maintain all temporary and permanent erosion control structures. Contractor shall provide routine maintenance of all existing sedimentation control devices during the entire contract period in compliance with the Virginia Erosion and Sedimentation Control Regulations. Maintenance shall include, but not be limited to, making all repairs as well as remove all accumulated sediment in accordance with the approved erosion and sedimentation control plan.
- C. Sediment shall be removed when the level of sediment deposition reaches halfway to the top of the barrier.

3.05 PERFORMANCE

- A. Should any of the temporary erosion and sediment control measures employed by the Contractor fail to produce results which comply with the requirements of the Virginia Erosion and Sedimentation Control Regulations, the Contractor shall immediately take whatever steps are necessary to correct the deficiency at his own expense.
- B. Erosion evident within the limits of construction shall be the responsibility of the Contractor during the full Contract term. Areas subject to erosion during this time shall be fully restored to original or design conditions (as applicable) within ten (30) days of notice to the Contractor.

3.06 REMOVAL AND FINAL CLEANUP

- A. Once the site has been fully stabilized against erosion, remove sediment control devices and all accumulated silt. Dispose of silt and waste materials offsite in accordance with all applicable regulations. Regrade all areas disturbed during this process and stabilize against erosion with surfacing materials as indicated on the Drawings.
- B. The Contractor shall vacuum clean all new and existing storm drainage facilities and discharge points affected by construction prior to final acceptance.

END OF SECTION

SECTION 02612

REINFORCED CONCRETE DRAIN PIPE

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. Furnish all labor, materials, equipment and incidentals necessary and install and test reinforced concrete pipe and flared end section for drains complete as shown on the Drawings and as specified herein.

1.02 RELATED WORK

- A. Granular materials are included in Section 02200.
- B. Trenching, backfilling and compaction are included in Section 02221.
- C. Precast Concrete Structures are included in Section 02605.

1.03 SUBMITTALS

- A. Within 30 days of the Effective Date of the Agreement submit the name of the pipe and fitting supplier and a list of materials to be furnished.
- B. Submit, in accordance with Section 01300, shop drawings showing layout and details of reinforcement, joint, method of manufacture and installation of pipe, specials and fittings, and a schedule of pipe lengths by diameter for the entire job.
- C. Prior to each shipment of pipe, submit the manufacturer's certification that the pipe for this Contract conforms to the ASTM Standards specified herein.

1.04 REFERENCE STANDARDS

- A. American Society for Testing and Materials (ASTM)
 - 1. ASTM C33 - Standard Specification for Concrete Aggregates.
 - 2. ASTM C76 - Standard Specification for Reinforced Concrete Culvert, Storm Drain and Sewer Pipe.
 - 3. ASTM C150 - Standard Specification for Portland Cement.
 - 4. ASTM C361 - Standard Specification for Reinforced Concrete Low-Head Pressure Pipe.
 - 5. ASTM C443 - Standard Specification for Joints for Circular Concrete Sewer and Culvert Pipe, Using Rubber Gaskets.

6. ASTM C924 - Standard Practice for Testing Concrete Pipe Sewer Lines by Low-Pressure Air Test Method.
7. ASTM E329 - Standard Specification for Agencies Engaged in the Testing and/or Inspection of Materials Used in Construction.

- B. Where reference is made to one of the above standards, the revision in effect at the time of bid opening shall apply.

1.05 QUALITY ASSURANCE

- A. The manufacturer shall perform the acceptance tests specified in ASTM C76, Paragraph 5.1.2.
- B. Inspection of the pipe will be made by the Engineer or other representatives of the Owner after delivery. The pipe shall be subject to rejection at any time on account of failure to meet any of the requirements specified herein, even though pipes may have been accepted as satisfactory at the place of manufacture. Pipe rejected after delivery shall be marked for identification and shall immediately be removed from the job.

PART 2 PRODUCTS

2.01 REINFORCED CONCRETE PIPE

- A. Except as otherwise specified herein, pipe shall conform to ASTM C76, Class and Wall designations matching the existing. The pipe interior shall be smooth and even, free from roughness, projections, indentations, offsets, or irregularities of any kind. The concrete mass shall be dense and uniform.
- B. Cement shall be non-air-entraining portland cement conforming to ASTM C150, Type II. The use of any admixture shall be subject to the specific approval of the Engineer.
- C. Fine aggregate shall consist of washed inert natural sand conforming to the requirements of ASTM C33, except for gradation, with a maximum loss of 8 percent when subjected to 5 cycles of the soundness test using magnesium sulfate. Coarse aggregate shall consist of well-graded crushed stone or washed gravel conforming to the requirements of ASTM C33, except for gradation, with a maximum loss of 8 percent when subjected to 5 cycles of the soundness test using magnesium sulfate. Documentation that the aggregates to be used in the manufacture of reinforced concrete pipe meet these requirements shall be submitted to the Engineer as stated in Paragraph 1.03 above.
- D. The 28-day compressive strength of the concrete, as indicated by cores cut from the pipe shall be equal to or greater than the design strength of the concrete. The concrete mass shall be dense and uniform. Reinforcement shall be circular for all concrete pipe. Quadrant steel shall not be used. Reinforcement shall be installed in both the bell and the spigot. At least one circumferential reinforcement wire shall be in both the bell and spigot area and reinforcement in the bell and spigot shall be adequate to prevent damage to concrete during shipping, handling and after installation. When cores indicate that reinforcing steel has less than 85 percent bond the pipe shall be subjected to a 3-edge bearing test to 13 psi to verify strength and water tightness.
- E. Pipe may be rejected for any of the following reasons:

1. Exposure of any steel reinforcement in any surface of the pipe.
 2. Transverse reinforcing steel found to be in excess of 1/4-in out of specified position after the pipe is molded.
 3. Any shattering or flaking of concrete at a crack.
 4. Voids, with the exception of a few minor bugholes, on the interior and exterior surfaces of the pipe exceeding 1/4-in in depth unless properly and soundly pointed with mortar or other approved material.
 5. Unauthorized application of any wash coat of cement or grout. Any pipe dressing procedures shall be subject to approval of the Engineer.
 6. A hollow spot (identified by tapping the internal surface of the pipe) which is greater than 30-in in length or wider than 3 times the specified wall thickness. Repair of such defective areas not exceeding these limitations may be made as specified in Paragraph 2.01R.
 7. Defects that indicate imperfect molding of concrete; or any surface defect indicating honeycomb or open texture (rock pockets) greater in size than area equal to a square with a side dimension of 2-1/2 times the wall thickness or deeper than two times the maximum graded aggregate size; or local deficiency of cement resulting in loosely bonded concrete, the area of which exceeds in size the limits of area described in Paragraph 2.01E9 above when the defective concrete is removed. Repair of such defects not exceeding these limits may be made as specified in Paragraph 2.01R.
 8. Any of the following:
 - a. A crack having a width of 0.005 to 0.01-in throughout a continuous length of 36-in or more.
 - b. A crack having a width of 0.0 to 0.03-in or more throughout a continuous length of 1-ft or more.
 - c. Any crack greater than 0.005-in extending through the wall of the pipe and having a length in excess of the wall thickness.
 - d. Any crack showing two visible lines of separation for a continuous length of 2-ft or more, or an interrupted length of 3-ft or more anywhere in evidence, both inside and outside.
 - e. Cracks anywhere greater than 0.03-in in width.
- F. The pipe shall be clearly marked as required by ASTM C76 in a manner acceptable to the Engineer. The markings may be at either end of the pipe for the convenience of the manufacturer, but for any one size shall always be at the same end of each pipe length. Pipe shall not be shipped until the compressive strength of the concrete has attained 4,000 psi.
- G. Pipe shall have a minimum laying length of approximately 8-ft, except for closure and other special pieces as approved by the Engineer. Have available at the site of the work sufficient pipe of various lengths to affect closure at manholes or structures that cannot be located to accommodate standard lengths. Short lengths of pipe made for closure etc., may be used in the

pipeline at the end of construction if properly spaced. The length of the incoming and outgoing concrete pipe at each structure shall not exceed 4-ft, except where the joint is cast flush with the exterior wall of the structure, where steel wall fittings are provided or where otherwise noted on the Drawings. Maximum laying length shall not exceed 16-ft, but the installation of 16-ft lengths will depend upon the ability to handle such lengths of pipe in sheeted trenches, comply with trench width requirements, maintain the integrity of the sheeting and avoid disturbance to adjacent ground. If in the opinion of the Engineer the use of 16-ft lengths is impracticable, shorter lengths shall be used.

- H. Each length of pipe shall be checked against the length noted on the shop drawings. Pipe more than 1-1/2-in longer than that shown on the shop drawings shall not be used on this project. Variations in length of the same pipe shall not exceed ASTM C76 requirements.
- I. During manufacturing, measuring devices shall be used to assure joint assembly is within the tolerance of ASTM C76 and this Section.
- O. At the time of inspection, the pipe will be carefully examined for compliance with the appropriate ASTM standard, as specified herein and shop drawings. All pipes shall be inspected for general appearance, dimension, "scratch-strength," blisters, cracks, roughness, soundness, etc. All pipes will be checked for soundness by being tapped and scratched at least once on every 50 sq in of pipe surface. The surface shall be dense and close-textured. Cores also shall serve as a basis for rejection of pipe, particularly if lamination or poor bond of reinforcement is apparent.
- P. The manufacturer shall use measuring devices to assure joint assembly is within tolerances of ASTM C76 and as specified herein. If, during construction, the pipes cannot be satisfactorily joined, the manufacturer shall pre-join the pipe at the plant.
- Q. Unsatisfactory or damaged pipe will be either permanently rejected or returned for minor repairs. Only that pipe actually conforming to the specifications and accepted will be listed for approval, shipment and payment. Approved pipe will be so stamped or stenciled on the inside before it is shipped. All pipe, which has been damaged after delivery, will be rejected and if such pipe already has been laid in the trench, it shall be acceptably repaired, if permitted, or removed and replaced, entirely at the Contractor's expense.
- R. Pits, blisters, rough spots, breakage and other imperfections may be repaired, subject to the approval of the Engineer, after demonstration by the manufacturer that strong and permanent repairs result. Repairs shall be carefully inspected before final approval. Non-shrink cement mortar used for repairs shall have a minimum compressive strength of 6,000 psi at the end of 7 days and 7,000 psi at the end of 28 days, when tested in 3-in cylinders stored in the standard manner. Epoxy mortar may be utilized for repairs subject to the approval of the Engineer.

2.02 JOINTS FOR CONCRETE PIPE

- A. Joints shall be concrete and rubber tongue and groove or bell and spigot type joint conforming to ASTM C361 with provisions for using a round rubber O-Ring gasket in a recess in the spigot end of the pipe. The bevel on the bell of the pipe shall be between 1-1/2 degrees and 2-1/2 degrees. The diameters of the joint surfaces, which compress the gasket, shall not vary from the true diameters by more than 1/16-in.

- B. The round rubber O-Ring gaskets shall conform to ASTM C443 except as otherwise specified herein. Two gaskets shall be submitted to the Engineer for tests at least 30 days before joining any the pipe.
- C. The ends of the pipe shall be made true to form and dimension and the bell shall be made by casting against steel forms. The manufacturer shall inspect all pipe joint surfaces for out-of-roundness and pipe ends for squareness. The manufacturer shall furnish to the Engineer a notarized affidavit stating all pipe meets the requirements of ASTM C76, as specified herein and the joint design.
- D. Joint filter fabric wrap shall be nonwoven geotextile construction fabric, ACF Environmental #35, or approved equal.

PART 3 EXECUTION

3.01 LAYING CONCRETE PIPE

- A. Care shall be taken in loading, transporting and unloading to prevent injury to the pipe or fittings and the joint surfaces. Pipe or fittings shall not be dropped. All pipe or fittings shall be examined before laying and no piece shall be installed which is found to be defective.
- B. New RCP shall be connected to existing RCP at nearest joint. Existing pipe shall be cleared and inspected for damage. In the event of damage to the existing pipe, inform the Owner before connecting new pipe.
- C. As soon as the excavation is completed to the normal grade of the bottom of the trench, place screened gravel in the trench and the pipe shall be firmly bedded in this gravel to conform accurately to the lines and grades indicated on the Drawings. Screened gravel shall conform to the requirements of Section 02200. Blocking under the pipe will not be permitted.
- D. Screened gravel shall be placed and compacted to give complete vertical and lateral support for the lower section of the pipe as indicated on the Drawings. A depression shall be left in the supporting gravel at the joint to prevent contamination of the rubber gasket immediately before being forced home. Before the pipe is lowered into the trench, the spigot and bell shall be cleaned and free from dirt. Gasket and bell shall be lubricated by a vegetable lubricant, which is not soluble in water, furnished by the pipe manufacturer and harmless to the rubber gasket. The pipe shall be properly aligned in the trench to avoid any possibility of contact with the side of the trench and fouling the gasket. As soon as the spigot is centered in the bell of the previously laid pipe, it shall be forced home with jacks or come-alongs. After the gasket is compressed and before the pipe is brought fully home, each gasket shall be carefully checked for proper position around the full circumference of the joint. Steel inserts shall be used to prevent the pipe from going home until the feeler gauge is used to check the final position of the gasket. The jacks or come-alongs shall be anchored sufficiently back along the pipeline (a minimum of five lengths) so that the pulling force will not dislodge the pieces of pipe already in place. Only a jack or come-along shall be employed to force the pipe home smoothly and evenly and hold the pipe while backfilling is in progress. Under no circumstances shall crowbars be used nor shall any of the motor driven equipment be used.
- E. As soon as the pipe is in place and before the come-along is released, backfill shall be placed as indicated on the Drawings and compacted for at least one-half the length of pipe. Not until this backfill is placed shall the come-along be released. If any motion at joints can be detected, a greater amount of backfill shall be placed before pressure is released. When pipe laying is not

in progress, including lunchtime, the open ends of the pipe shall be closed by a watertight plug or other approved means.

- F. Carefully regulate the equipment and construction operations such that the loading of the pipe does not exceed the loads for which the pipe is designed and manufactured. Any pipe damaged during construction operations shall promptly and satisfactorily be repaired or replaced at the Contractor's expense.
- G. Connections to catch basins and junction boxes shall include a minimum 12-inch long, 6-inch wide concrete collar.
- H. Joint filter fabric wrap shall be centered on pipe joint with minimum 12-inch width of fabric on either side of joint. Filter fabric shall wrap around outer diameter of RCP a minimum of 1 ½ times.

END OF SECTION

SECTION 02623

POLYETHYLENE PIPE

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. Furnish all labor, materials, equipment and incidentals required and install corrugated polyethylene pipe complete as shown on the Drawings and as specified herein.

1.02 RELATED WORK

- A. Dewatering and drainage are included in Section 02140.
- B. Earthwork is included in Section 02200.

1.03 SUBMITTALS

- A. Submit, in accordance with Section 01300, product information associated with the pipe and joint coupler.

1.04 REFERENCE STANDARDS

- A. ASTM International
 - 1. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Methods (56,000 ft-lbf/ft³)(2,700 kN-m/m³)
 - 2. ASTM D2321 - Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Application.
 - 3. ASTM D3212 - Standard Specification for Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals.
 - 4. ASTM D3350 - Standard Specification for Polyethylene Plastics Pipe and Fittings Materials.
 - 5. ASTM F477 - Standard Specification (Gaskets) for Joining Plastic Pipe.
- B. Where reference is made to one of the above standards, the revision in effect at the time of bid opening shall apply.

1.05 QUALITY ASSURANCE

- A. All polyethylene pipe and fittings shall be from a single manufacturer.
- B. Inspection of the pipe may be made by the Engineer or other representatives of the Owner after delivery. The pipe shall be subject to rejection at any time on account of failure to meet any of the requirements specified herein, even though pipes may have been accepted as satisfactory at

the place of manufacture. Pipe rejected after delivery shall be marked for identification and shall immediately be removed from the job.

1.06 WARRANTY

- A. The pipe manufacturer shall provide a warranty against manufacturing defects of material and workmanship for a period of ten years after the final acceptance of the project by the Owner. The manufacturer shall replace, at no additional cost to the Owner, any defective pipe material within the warranty period.

PART 2 PRODUCTS

2.01 MATERIALS

A. General

- 1. The pipe and fittings shall be free from all defects including indentations, delaminations, cracks, bubbles and pinholes which, due to their nature, degree, or extent, detrimentally affect the strength and serviceability of the pipe. Any pipe or fittings with such defects which, in the judgement of the Engineer, will affect the strength and serviceability shall be repaired or rejected.

B. Pipe

- 1. The polyethylene pipe and fittings shall be manufactured in accordance with ASTM F405. The pipe shall be single wall corrugated heavy duty pipe having annular interior and exterior corrugations.
- 2. Fittings: Pipe fittings shall conform to ASTM F405 or ASTM F667 material properties.
- 1. Joints for 3- to 24- inch (75 – 600 mm) shall be made with split or snap couplings. Standard connections shall meet the requirements of the ASTM F405 or ASTM F667.

PART 3 EXECUTION

3.01 LAYING PIPE

- A. All pipes shall be installed in accordance with Practice D 2321, the pipe manufacturer's instructions, and this specification.
- B. Care shall be taken in loading, transporting, and unloading to prevent injury to the pipe. Pipe shall not be dropped. All pipe shall be examined before laying and no piece shall be installed which is found to be defective. All pipe found to be defective shall be marked and removed from the site immediately. If any defective pipe is discovered after it has been laid, it shall be removed and replaced with a sound pipe in a satisfactory manner, at the Contractor's own expense.
- C. All pipe shall be sound and clean before installing. When laying of the pipe is not in progress, including lunchtime, the open ends of the pipe shall be closed by watertight plugs or other

approved means. Good alignment shall be preserved in laying. The deflection at joints shall not exceed one-half of that recommended by manufacturer.

- D. Pipes shall not be laid in standing or running water. All trenches shall be properly dewatered and provisions shall be included to prevent surface and water from other sources from entering the trench.
- E. As soon as the excavation is completed to the normal grade of the bottom of the trench, the Engineer shall inspect the bottom of the excavation. In all cases, the bottom of the trench shall be firm and stable and shall provide uniform support for the pipe. The trench bottom shall be smooth, dry and free of all sloughed material and hard spots. Immediately after acceptance by the Engineer, screened gravel bedding shall be placed and thoroughly compacted to conform to the line and grade of the pipe as indicated on the Drawings. Compaction shall be by the use of hand tampers, hand-held power tampers or hand held vibrating compaction equipment. The use of water shall be restricted to the amount necessary to achieve optimum moisture content for compaction. Flooding, water jetting and/or water tamping is not permitted.
- F. For the purposes of this specification section, thorough compaction shall be defined as minimum 92 percent of maximum density as determined by ASTM D1557, Method D. The Contractor shall provide field density tests periodically at the direction of the Engineer to ensure compliance with this requirement.
- G. After backfill material has been placed and thoroughly compacted on both sides of the pipe to mid-diameter and the alignment checked to ensure that the pipe did not move during backfilling, backfill shall be placed to one-foot over the top of the pipe. The backfill shall be placed in lifts not to exceed 9-inches and thoroughly compacted. Each lift shall be compacted evenly on both sides of the pipe before the next lift is added. The use of hand tampers or hand-held power tampers weighing less than twenty pounds may be used in the initial backfilling compaction efforts provided the compaction is parallel to the pipe and not directly above any portion of the pipe. The use of any static and or vibrating mechanical compactors shall not be used until there is a minimum of 12-in of compacted backfill material above the pipe, and then, only with the approval of the Engineer. Backfilling and compaction of the remainder of the trench shall be as specified in Section 02221.
- H. The use of water jetting or the use of water under pressure for compaction shall not be used.
- I. Regulate the equipment and construction operations such that the loading of the pipe does not exceed the loads for which the pipe is designed and manufactured. Any pipe damaged during construction operations shall promptly and satisfactorily be repaired or replaced at the Contractor's expense.
- J. Precautions shall be taken to prevent flotation of the pipe in the trench.
- K. When moveable trench bracing such as trench boxes, movable sheeting, shoring or plates are used to support the sides of the trench, care shall be taken to prevent movement of the pipe or disturbance of the bedding and backfill material during the movement of the moveable trench bracing equipment. Trench boxes, moveable sheeting, shoring and plates shall not extend below the top of the pipe. As trench boxes, moveable sheeting, shoring and plates are moved, pipe bedding shall be placed to fill any voids created and the backfill shall be re-compacted to provide uniform side support for the pipe. Any moveable trench bracing, sheeting, shoring or plates placed below the top of the pipe shall be left in place and cut off at an elevation to be

determined by the Engineer. The cost of any moveable trench bracing, sheeting, shoring or plates left in place, plus the cost of cutting-off material, shall be solely at the contractor's expense.

END OF SECTION

SECTION 02830
CHAIN-LINK FENCES AND GATES

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. Furnish all labor, materials, equipment and incidentals required and design and deliver chain-link fences and gates for the Project as shown on the Drawings and as specified herein.
- B. The work includes:
 - 1. Chain-link fences.
 - 2. Gates: swing.

1.02 RELATED WORK

- A. Concrete is included in Division 3.

1.03 SUBMITTALS

- A. Submit in accordance with Section 01300.
- B. Product Data: For each type of product indicated include construction details, material descriptions, dimensions of individual components and profiles, and finishes for chain-link fences and gates.
 - 1. Fence and gate posts, rails, and fittings.
 - 2. Chain-link fabric, reinforcements, and attachments.
 - 3. Accessories.
 - 4. Gates and hardware.
 - 5. Gate operators, including operating instructions.
 - 6. Motors: Show nameplate data, ratings, characteristics, and mounting arrangements.
- C. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work. Show accessories, hardware, gate operation, and operational clearances.
- D. Product Test Reports: For framing strength according to ASTM F 1043.
- E. Operation and Maintenance Data: For the following to include in emergency, operation, and maintenance manuals:
 - 1. Polymer finishes.
 - 2. Gate hardware.

1.04 REFERENCE STANDARDS

A. American Society of Civil Engineers/Structural Engineering Institute

1. ASCE/SEI 7 - Minimum Design Loads for Buildings and Other Structures

B. ASTM International

1. ASTM A 123/A 123M - Specification for Zinc (Hot-Dipped Galvanized) Coatings on Iron and Steel Products
2. ASTM A 392 - Specification for Zinc-Coated Steel Chain Link Fence Fabric
3. ASTM A 491 - Specification for Aluminum-Coated Steel Chain Link Fence Fabric
4. ASTM A 653/A 653M - Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process
5. ASTM A 817 - Specification for Metallic-Coated Steel Wire for Chain Link Fence Fabric and Marcellled Tension Wire
6. ASTM A 824 - Specification for Metallic-Coated Steel Marcellled Tension Wire for Use with Chain Link Fence
7. ASTM B 211 - Specification for Aluminum and Aluminum-Alloy Bar, Rod, and Wire
8. ASTM B 429/B 429M - Specification for Aluminum-Alloy Extruded Structural Pipe and Tube
9. ASTM C 1107 - for Packaged Dry, Hydraulic-Cement Grout (Nonshrink)
10. ASTM F 567 - Practice for Installation of Chain Link Fence
11. ASTM F 626 - Specification for Fence Fittings
12. ASTM F 668 - Specification for Poly(Vinyl Chloride) (PVC) and Other Organic Polymer-Coated Steel Chain Link Fence Fabric
13. ASTM F 900 - Specification for Industrial and Commercial Swing Gates
14. ASTM F 934 - Specification for Standard Colors for Polymer-Coated Chain Link Fence Materials
15. ASTM F 1043 - Specification for Strength and Protective Coatings on Metal Industrial Chain Link Fence Framework
16. ASTM F 1083 - Specification for Pipe, Steel, Hot-Dipped Zinc-Coated (Galvanized) Welded, for Fence Structures
17. ASTM F 1183 - Specification for Aluminum Alloy Chain Link Fence Fabric

18. STM F 1345 - Specification for Zinc-5% Aluminum-Mischmetal Alloy-Coated Steel Chain Link Fence Fabric
19. ASTM F 1553 - Guide for Specifying Chain Link Fence
20. ASTM F 1664 - Specification for Poly(Vinyl Chloride) (PVC)-Coated Steel Tension Wire Used with Chain Link Fence

C. Chain Link Fence Manufacturers Institute

1. CLFMI WLG 2445 - Guide for Selection of Line Post Spacings for Chain Link Fence
2. CLFMI Product Manual.

D. U.S. Architectural & Transportation Barriers Compliance Board

1. Americans with Disabilities Act (ADA) and Architectural Barriers Act (ABA) Accessibility Guidelines for Buildings and Facilities.

E. Where reference is made to one of the above or other referenced standards, the revisions in effect at the time of bid opening shall apply.

1.05 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Design chain-link fences and gates, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.
- B. Structural Performance: Chain-link fence and gate framework shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated according to ASCE/SEI 7:
 1. Minimum Post Size: Determine according to ASTM F 1043 for framework up to 12 feet high, and post spacing not to exceed 10 feet.
 2. Minimum Post Size and Maximum Spacing: Determine according to CLFMI WLG 2445, based on mesh size and pattern matching existing and on the following:
 - a. Wind Loads: To match existing
 - b. Exposure Category: To match existing
 - c. Fence Height: To match existing
 - d. Material Group: To match existing

1.06 PROJECT CONDITIONS

- A. Field Measurements: Verify layout information for chain-link fences and gates shown on Drawings in relation to property survey and existing structures. Verify dimensions by field measurements.

1.07 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer or Installer agrees to repair or replace components of chain-link fences and gates that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Faulty operation of gate operators and controls.
 - b. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
 - 2. Warranty Period: 5 years from date of Substantial Completion.

PART 2 PRODUCTS

2.01 CHAIN-LINK FENCE FABRIC

- A. General: Provide fabric in one-piece heights measured between top and bottom of outer edge of selvage knuckle or twist. Comply with CLFMI Product Manual and with requirements indicated below:
 - a. Fabric Height: To match existing
 - 2. Steel Wire Fabric: Wire with a diameter to match existing.
 - a. Mesh Size: To match existing
 - b. Aluminum-Coated Fabric: ASTM A 491, Type I, To match existing.
 - c. Zinc-Coated Fabric: ASTM A 392, Type II, To match existing.
 - d. Zn-5-Al-MM Aluminum-Mischmetal-Coated Fabric: ASTM F 1345, Type III, to match existing.
 - e. Polymer-Coated Fabric: ASTM F 668, to match existing coated steel wire.
 - 1) Color: To match existing, complying with ASTM F 934.
 - f. Coat selvage ends of fabric that is metallic coated before the weaving process with manufacturer's standard clear protective coating.
 - 3. Aluminum Wire Fabric: ASTM F 1183.
 - a. Mesh Size: To match existing.
 - 4. Selvage: To match existing.

2.02 FENCE FRAMING

- A. Posts and Rails: Comply with ASTM F 1043 for framing, including rails, braces, and line; terminal; and corner posts. Provide members with minimum dimensions and wall thickness according to ASTM F 1043 based on the following:
 - 1. Fence Height: To match existing.
 - 2. Light Industrial Strength: Material to match existing.
 - a. Line Post: To match existing.
 - b. End, Corner and Pull Post: To match existing.
 - 3. Horizontal Framework Members: To match existing rails complying with ASTM F 1043.

- a. Top Rail: To match existing.
- 4. Brace Rails: Comply with ASTM F 1043.
- 5. Metallic Coating for Steel Framing:
 - a. Type A, consisting of not less than minimum 2.0-oz./sq. ft. average zinc coating per ASTM A 123/A 123M or 4.0-oz./sq. ft. zinc coating per ASTM A 653/A 653M.
 - b. Type B, zinc with organic overcoat, consisting of a minimum of 0.9 oz./sq. ft. of zinc after welding, a chromate conversion coating, and a clear, verifiable polymer film.
 - c. External, Type B, zinc with organic overcoat, consisting of a minimum of 0.9 oz./sq. ft. of zinc after welding, a chromate conversion coating, and a clear, verifiable polymer film. Internal, Type D, consisting of 81 percent, not less than 0.3-mil- thick, zinc-pigmented coating.
 - d. Type C, Zn-5-Al-MM alloy, consisting of not less than 1.8-oz./sq. ft. coating.
 - e. Coatings: Any coating above.
- 6. Polymer coating over metallic coating.
 - a. Color: To match existing complying with ASTM F 934.

2.03 TENSION WIRE

- A. Metallic-Coated Steel Wire: 0.177-inch- diameter, marcelled tension wire complying with ASTM A 817 and ASTM A 824, with the following metallic coating:
 - 1. Type I, aluminum coated (aluminized).
 - 2. Type II, zinc coated (galvanized) by [hot-dip] [electrolytic] process, with the following minimum coating weight:
 - a. Class 3: Not less than 0.8 oz./sq. ft. of uncoated wire surface.
 - b. Class 4: Not less than 1.2 oz./sq. ft. of uncoated wire surface.
 - c. Class 5: Not less than 2 oz./sq. ft. of uncoated wire surface.
 - d. Matching chain-link fabric coating weight.
 - 3. Type III, Zn-5-Al-MM alloy with the following minimum coating weight:
 - a. Class 60: Not less than 0.6 oz./sq. ft. of uncoated wire surface.
 - b. Class 100: Not less than 1 oz./sq. ft. of uncoated wire surface.
 - c. Matching chain-link fabric coating weight.
- B. Polymer-Coated Steel Wire: To match existing coated steel wire.
 - 1. Color: To match existing, complying with ASTM F 934.
- C. Aluminum Wire: 0.192-inch- diameter tension wire, mill finished, complying with ASTM B 211, Alloy 6061-T94 with 50,000-psi minimum tensile strength.

2.04 FITTINGS

- A. General: Comply with ASTM F 626.
- B. Post Caps: Provide for each post.

1. Provide line post caps with loop to receive tension wire or top rail.
- C. Rail and Brace Ends: For each gate, corner, pull, and end post.
- D. Rail Fittings: Provide the following:
 1. Top Rail Sleeves: To match existing not less than 6 inches long.
 2. Rail Clamps: Line and corner boulevard clamps for connecting [intermediate] [and] [bottom] rails in the fence line-to-line posts.
- E. Tension and Brace Bands: To match existing.
- F. Tension Bars: Material to match existing length not less than 2 inches shorter than full height of chain-link fabric. Provide one bar for each gate and end post, and two for each corner and pull post, unless fabric is integrally woven into post.
- G. Truss Rod Assemblies: To match existing rod and turnbuckle or other means of adjustment.
- H. Tie Wires, Clips, and Fasteners: According to ASTM F 626.
 1. Standard Round Wire Ties: For attaching chain-link fabric to posts, rails, and frames, complying with the following:
 - a. Hot-Dip Galvanized Steel: [0.106-inch-] [0.148-inch-] diameter wire[; galvanized coating thickness matching coating thickness of chain-link fence fabric].
 - b. Aluminum: ASTM B 211; Alloy 1350-H19; [0.148-inch-] [0.192-inch-] diameter, mill-finished wire.
- I. Finish:
 1. Metallic Coating for Pressed Steel or Cast Iron: Not less than 1.2 oz. /sq. ft. zinc.
 - a. Polymer coating over metallic coating.
 2. Aluminum: Mill finish.

2.05 GROUT AND ANCHORING CEMENT

- A. Nonshrink, Nonmetallic Grout: Premixed, factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107. Provide grout, recommended in writing by manufacturer, for exterior applications.
- B. Erosion-Resistant Anchoring Cement: Factory-packaged, nonshrink, nonstaining, hydraulic-controlled expansion cement formulation for mixing with potable water at Project site to create pourable anchoring, patching, and grouting compound. Provide formulation that is resistant to erosion from water exposure without needing protection by a sealer or waterproof coating and that is recommended in writing by manufacturer, for exterior applications.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine areas and conditions, with Installer present, for compliance with requirements for site clearing, earthwork, pavement work, and other conditions affecting performance of the Work.
 - 1. Do not begin installation before final grading is completed unless otherwise permitted by Engineer.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Stake locations of fence lines, gates, and terminal posts. Do not exceed intervals of 500 feet or line of sight between stakes. Indicate locations of utilities, lawn sprinkler system, underground structures, benchmarks, and property monuments.

3.03 INSTALLATION, GENERAL

- A. Install chain-link fencing to comply with ASTM F 567 and more stringent requirements indicated.

3.04 CHAIN-LINK FENCE INSTALLATION

- A. Post Excavation: Drill or hand-excavate holes for posts to diameters and spacings indicated, in firm, undisturbed soil.
- B. Post Setting: Set posts in concrete.
 - 1. Verify that posts are set plumb, aligned, and at correct height and spacing, and hold in position during setting with concrete or mechanical devices.
 - 2. Concrete Fill: Place concrete around posts to dimensions indicated and vibrate or tamp for consolidation. Protect aboveground portion of posts from concrete splatter.
 - a. Exposed Concrete: Extend 2 inches above grade; shape and smooth to shed water.
 - b. Concealed Concrete: Top 2 inches below grade to allow covering with surface material.
 - c. Posts Set into Concrete in Sleeves: Use steel pipe sleeves preset and anchored into concrete for installing posts. After posts have been inserted into sleeves, fill annular space between post and sleeve with nonshrink grout, mixed and placed to comply with anchoring material manufacturer's written instructions, and finished sloped to drain water away from post.
 - d. Posts Set into Voids in Concrete: Form or core drill holes not less than 5 inches deep and 3/4 inch larger than OD of post. Clean holes of loose material, insert posts, and fill annular space between post and concrete with nonshrink grout, mixed and placed to comply with anchoring material manufacturer's written instructions, and finished sloped to drain water away from post.
- C. Terminal Posts: Locate terminal end, corner, and gate posts to match existing per ASTM F 567 and terminal pull posts at changes in horizontal or vertical alignment.

- D. Line Posts: Space line posts uniformly to match existing.
- E. Post Bracing and Intermediate Rails: Install according to ASTM F 567, maintaining plumb position and alignment of fencing. Diagonally brace terminal posts to adjacent line posts with truss rods and turnbuckles. Install braces at end and gate posts and at both sides of corner and pull posts.
 - 1. Locate horizontal braces at midheight of fabric 72 inches or higher, on fences with top rail and at two-third fabric height on fences without top rail. Install so posts are plumb when diagonal rod is under proper tension.
- F. Tension Wire: Install according to ASTM F 567, maintaining plumb position and alignment of fencing. Pull wire taut, without sags. Fasten fabric to tension wire with 0.120-inch- diameter hog rings of same material and finish as fabric wire, spaced a maximum of 24 inches o.c. Install tension wire in locations indicated before stretching fabric. Provide horizontal tension wire at the following locations:
 - 1. Extended along top and bottom of fence fabric. Install top tension wire through post cap loops. Install bottom tension wire within 6 inches of bottom of fabric and tie to each post with not less than same diameter and type of wire.
- G. Top Rail: Install according to ASTM F 567, maintaining plumb position and alignment of fencing. Run rail continuously through line post caps, bending to radius for curved runs and terminating into rail end attached to posts or post caps fabricated to receive rail at terminal posts. Provide expansion couplings as recommended in writing by fencing manufacturer.
- H. Intermediate and Bottom Rails: Install and secure to posts with fittings.
- I. Tension or Stretcher Bars: Thread through fabric and secure to end, corner, pull, and gate posts with tension bands spaced not more than 15 inches o.c.
- J. Tie Wires: Use wire of proper length to firmly secure fabric to line posts and rails. Attach wire at one end to chain-link fabric, wrap wire around post a minimum of 180 degrees, and attach other end to chain-link fabric per ASTM F 626. Bend ends of wire to minimize hazard to individuals and clothing.
 - 1. Maximum Spacing: Tie fabric to line posts at 12 inches o.c. and to braces at 24 inches o.c.
- K. Fasteners: Install nuts for tension bands and carriage bolts on the side of the fence on the in side.

3.05 GATE INSTALLATION

- A. Install gates according to manufacturer's written instructions, level, plumb, and secure for full opening without interference. Attach fabric as for fencing. Attach hardware using tamper-resistant or concealed means. Install ground-set items in concrete for anchorage. Adjust hardware for smooth operation and lubricate where necessary.

END OF SECTION

SECTION 02835

WOODEN FENCES

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. Furnish all labor, materials, equipment and incidentals necessary to accomplish and install the following:

- 1. 4-ft high wood board fence and gates.

1.02 RELATED WORK

- A. Earthwork is included in Section 02200.

1.03 SUBMITTALS

- A. Shop Drawings - The Contractor shall submit five (5) copies of all required shop drawings and fabrication details for approval by Owner's Representative.
 - 1. 4-ft-in high stockade fence: Shop drawings and fabrication details shall show surface material, overall heights of fence, including posts, pickets and rails, horizontal and vertical spacing of posts, pickets and rails, dimension of concrete footings, post, and rail details, dimensions of rails, posts and pickets, fabrication and finishing process and typical attachments of fence panels to each other and attachments of fence panels to posts.
 - 2. In the event that it is impossible to conform to certain details of the Specification due to the different manufacturing techniques, describe completely all nonconforming aspects.

1.04 DELIVERY, STORAGE AND HANDLING

- A. All fence materials shall be cut, shipped and stockpiled throughout the finishing and installation process with protective measures to ensure non-damaged, 'like new' products at the time of installation. Broken, bent, twisted or otherwise damaged products shall not be used and shall be disposed of in a legal manner to an off site location and shall be replaced with new products at no cost to the Owner and in a manner as approved by the Owner's Representative.
- B. Handle fence materials to prevent chipping, breakage, soiling or other damage.

PART 2 PRODUCTS

2.01 WOOD FENCE

- A. Four foot high wood fence shall be four-ft height to match quality and appearance of existing wood fence.

PART 3 EXECUTION

3.01 STOCKADE FENCE INSTALLATION

- A. Layout fencing and gates in field as shown on the Drawings and obtain Engineer's approval prior to installation.
- B. Posts shall be set true to line and grade of fence.
- C. Set all posts as shown on the drawings.
- D. Assemble in accordance with manufacturer's recommendations.
- E. Attach fence sections to posts with manufacturer recommended hardware.
- F. Space posts equally.
- G. Deliver finished fence materials to the site and install posts and pickets plumb in locations as shown on the Drawings so that top of fence is typically 48-in above existing grade. Install with manufacturer's hardware.
- H. Install fencing and manually-closing gate per manufacturer's requirements.

END OF SECTION

SECTION 02900
UPLAND BUFFER PLANTING

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. Furnish all labor, materials, equipment and service required and complete all upland planting work indicated on the Drawings and as specified herein, including but not necessarily limited to the following:
 - 1. Supplying of loam for all plant pits and planting beds. Be responsible for all topsoil preparation, testing, conditioning and fertilization and shall ensure the overall quality of the material. Loam stockpiled from other construction operations under this Section may be used.
 - 2. Excavation of pits for trees.
 - 3. Furnishing and planting trees and shrubs as shown on the Drawings.
 - 4. Supplying accessory materials and guying and staking of all trees 5 to 6-ft in height and larger.
 - 5. Pruning of plant materials as specified and as approved by the Engineer.
 - 6. Supplying and spreading mulch for tree pits and planting beds as specified herein.
 - 7. Maintenance and guarantee.
 - 8. Final cleanup and all other work required to complete the job in accordance with the Drawings and as specified herein.
- B. The planting work shall be performed by a landscape contractor who is fully experienced in projects of this scope and whose main business is landscaping. Selection of the landscape contractor shall be subject to the approval of the Engineer.

1.02 RELATED WORK

- A. Site Preparation including clearing, grubbing and stripping is included in Section 02100.
- B. Earthwork is included in Section 02200.
- C. Erosion and sedimentation control is included in Section 02276.
- D. Upland Loaming and Seeding is in Section 02930.
- E. Stream and Wetland Stabilization and Planting is in Section 02955.

1.03 SUBMITTALS

- A. Submit, in accordance with Section 01300, the following:
 - 1. Materials List: Submit shop drawings for all materials and equipment furnished under this section, as well as a list of all plants, live stakes, and seed (including product label information) to be installed, including names and addresses of sources, to Engineer within 21 calendar days after receipt of Notice to Proceed.
 - 2. State Nursery Inspection Certificates and samples of material for inspection and acceptance upon Engineer's request for inspection and approval.
 - 3. Certification by the landscaping contractor that all plant stock obtained for this work is the plant indicated and of quality as specified.
 - 4. Documentation showing that the landscaping contractor performing the work has successfully completed at least two projects of this scope within the last two years and showing that their main business is landscaping.

1.04 REFERENCE STANDARDS

- A. American Standard for Nursery Stock, ANSI Z60.1.
- B. Tree and Shrub Transplanting Manual by the International Society of Arboriculture (ISA)
- C. American National Standards Institute (ANSI) Standards for Tree Care Operations, ANSI A300
- D. American Society for Testing and Materials (ASTM) Standard Specification for Topsoil Used for Landscaping Purposes, ASTM D5268
- E. ANSI A-300 Pruning Standards
- F. Where reference is made to one of the above standards, the revision in effect at the time of bid opening shall apply.

PART 2 PRODUCTS

2.01 LOAM

- A. Loam shall be as specified in Section 02930.
- B. No loam shall be delivered or spread in a frozen or muddy condition.

2.02 FERTILIZER, SOIL AND PLANT CONDITIONERS

- A. Fertilizer shall be commercial mixed free flowing granules or pelleted fertilizer, 10-10-10 (N-P2O5-K2O) with at least 40 percent of the nitrogen in the fertilizer to be slowly available (organic) form. Fertilizer shall be delivered to the site in original unopened containers each showing the manufacturer's guaranteed analysis conforming to applicable state fertilizer laws.
- B. Peat Moss: Shall be domestic brown sphagnum peat, free of woody materials and of mineral matter such as sulfur and iron and shall have a pH value between 4 and 5. Deliver air dry.

- C. Anti-desiccant: Shall be an emulsion which provides a protective film over plant surfaces to help retain moisture, but permeable enough to permit transpiration. Anti-desiccant shall be delivered in the manufacturer's containers and shall be mixed with water in proportions recommended by manufacturer. Anti-desiccant shall be "WILT-PRUF" available from Nursery Specialty Products Inc., Greenwich, CT or equal.
- D. Bone Meal: Shall be commercial raw bone meal, finely ground, having a minimum analysis of 4 percent nitrogen and 20 percent phosphoric acid.
- E. Mulch: Shall be Shredded Pine Bark Mulch consisting of pine bark strips no longer than 2-in in any dimension, free of wood chips, stones or other undesirable matter with a pH range between 4 and 5.
- F. Water used in this work shall be furnished by the Contractor and shall be suitable for irrigation and free from ingredients harmful to plant life. Hose and other watering equipment required for the work shall be furnished by the Contractor.

2.03 ACCESSORY MATERIALS

- A. Stakes: Shall be used for supporting all trees and shall be of sound wood, uniform in size, reasonably free of knots and capable of standing in the ground at least 2 years. Stakes shall be treated with a non-toxic preservative stain with a rich dark brown color. A sample shall be provided for approval by the Engineer. Stakes shall be 2 by 4 and not less than 8-ft in length.
- B. Wire: For tree staking, shall be Double No. 10 gauge galvanized soft steel wire, twisted.
- C. Hose: To encase wires, shall be two-ply fiber-bearing black rubber garden hose, not less than 1/2-in inside diameter and a minimum of 8-in in length.

2.04 PLANT MATERIALS

- A. Furnish plants in quantities required to complete the work as indicated on the Drawings.
- B. Nomenclature is in conformance with standard horticultural practice in the area. Plants are to be delivered to the site with tags bearing the botanic name as indicated by the plant list. In all cases, botanical names take precedence over common names.
- C. All plants shall be typical of their species or variety and shall have a normal habit of growth. Plants shall be sound, healthy and vigorous, well-branched, and densely foliated when in leaf; shall be free of disease, insect pests, eggs, or larvae, and shall have healthy, well-developed root systems. Plants must conform to the requirements of the American Standard for Nursery Stock, ANSI Z60.1. All plants are subject to inspection.
- D. Plants shall be nursery grown under climatic conditions similar to those in the locality of the project and shall conform to the variety and sizes indicated.
- E. All plants shall be freshly dug or container grown. No heeled-in plants or plants from cold storage other than dormant willow stakes shall be used. Plants shall be healthy and vigorous, well-branched and densely foliated when in leaf; shall be free of disease, insect pests, eggs or larvae and shall have healthy, well-developed root systems. All parts of the plant shall be moist and shall show active green cambium when cut to demonstrate plants are healthy and vigorous.

Plants shall be prepared for shipment in a manner that will not cause damage to branches, shape, and future development after planting.

- F. Balled and burlapped plants shall be nursery grown stock adequately balled with firm, natural balls of soil in sizes and ratios conforming to ANSI Z60.1. Balls shall be firmly wrapped with non-treated burlap, secured with wire or jute. Balls shall be drum laced for sizes 30-in or greater. Broken balls will not be accepted.
- G. Container-Grown Stock shall have been grown in a container long enough for the root system to have developed sufficiently to hold its soil together, firm and whole. No plants shall be loose in the container.
- H. If larger plants are used, upon acceptance by the Engineer, the spread of roots or ball of earth shall be increased in proportion to the size of the plant.
- I. The height of the trees, measured from the crown of the roots to the top of the top branch, shall not be less than the minimum size designated. The trunk of each tree shall be a single trunk growing from a single unmutilated crown of roots unless a multi-trunk tree is specified. No part of the trunk shall be conspicuously crooked as compared with normal trees of the same variety. The trunk shall be free from sun-scald, frost cracks, or wounds resulting from abrasions, fire, or other causes. No pruning wounds shall be present having a diameter of more than 2-in and such wounds must show vigorous bark on all edges.
- J. Plants shall be handled so that roots are adequately protected at all times from drying out and from other injury. Protect balls of balled plants which cannot be planted within 12 hours of delivery with soil or other suitable materials. Plants must be stored in the shade. Keep all plant roots moist before, during, and after planting.

2.05 INSPECTION OF PLANT MATERIALS

- A. Inspection of plants before digging shall be at the option of the Engineer. Be present if requested by Engineer, for inspection of plants at nursery.
- B. Plants shall be subjected to inspection and approval upon delivery for conformity to specified requirements as to quality, size and variety. Such approval shall not impair the right of inspection and rejection during the progress of the work.
- C. Plants shall be accompanied by State Nursery inspection certificates.
- D. No plants will be accepted with plastic burlap or if the ball is cracked or broken.

PART 3 EXECUTION

3.01 DIGGING, HANDLING AND PROTECTION OF PLANTS

- A. Roots or balls of plants shall be adequately protected at all times from sun and from drying winds.
- B. Plants which cannot be planted immediately upon delivery shall be set on the ground and be well-protected with soil, wet moss, bark mulch, or other acceptable material.

- C. No plant shall be bound with wire or rope at any time so as to damage the bark or break branches.

3.02 PLANTING SEASONS

- A. Planting shall only be done during the periods within the seasons which are normal for such work as determined by weather and by locally acceptable practice and which are approved by the Engineer. If planting occurs between May 15th and September 15th or during periods of drought, irrigation shall be furnished as directed by the Engineer. Do not plant when ground is frozen.

3.03 PLANTING OPERATIONS

- A. Planting: Shall be done by experienced workmen familiar with planting procedures under the supervision of a qualified foreman.
- B. Stake out locations of and secure the Engineer's approval before excavating plant pits.
- C. All plant pits shall be excavated with vertical sides.
- D. Tree Pits: Shall be 2-ft greater in diameter than the root ball of the tree and sufficiently deep to allow for a 1-ft thick layer of compacted loam and peat moss beneath the ball.
- E. Shrub Beds: Shall be tilled to 18-in below top of loam.
- F. Plant backfill mixture: Loam for backfilling all tree pits shall have 3 lbs of fertilizer and 1 lb of bone meal per tree and 1 lb of fertilizer and 1/2 lb of bone meal per shrub, incorporated with peat moss at a ratio of 2 parts loam to 1 part peat moss.
- G. Plants shall be set in center of pits plumb and straight and at such a level that after settlement, the crown of the plant ball will be at the surrounding finished grade.
 - 1. For balled and burlapped (B&B) material, untie and remove burlap from the root ball. Do not fold burlap or bury in tree pit. Remove all wire, rope, and/or plastic burlap from the root ball. Remove twine from around tree trunks . All materials or ropes must be completely removed from root balls and trunks.
 - 2. For container plants, remove and dispose of containers prior to planting. To encourage immediate root development, the outer one-half inch of the root ball shall be gently loosened. Prune away any circling roots.
 - 3. All burlap, rope, wire and similar materials shall be removed from all plants and disposed of off-site.
- H. Loam shall be backfilled in layers of not more than 9-in and each layer watered sufficiently to settle before the next layer is put in place.
- I. Loam around balls shall be thoroughly compacted and watered. Immediately after the plant pit is backfilled, a saucer or shallow basin slightly larger than pit shall be formed with a ridge of soil to facilitate and contain watering.

- J. Spray all plants with anti-desiccant, including trunk, branches, foliage and buds. Follow manufacturer's instructions and recommendations for application of anti-desiccant.
- K. Relocated plants shall be removed and relocated according Standard for Nursery Stock, ANSI Z60.1 and guaranteed for 2 years after installation.

3.04 GUYING AND STAKING

- A. All shade trees, flowering trees and evergreen trees 5 to 6-ft in height and larger shall be staked in accordance with the tree staking detail.

3.05 PRUNING AND MULCHING

- A. Each plant shall be pruned at the time of planting in accordance with AAN Standards to preserve the natural character of the plant and as directed by the Engineer.
- B. Pruning shall be done with clean, sharp tools.
- C. Cuts over 1-in in diameter shall be painted with an approved tree paint. Paint shall cover all exposed cambium as well as other exposed living tissue. Paint shall be waterproof, adhesive and elastic, antiseptic, free from kerosene, coal tar, creosote, or any other material injurious to the life of the tree.
- D. Immediately after planting operations are completed, all tree pits shall be covered with a 3-in layer of the specified mulch.

3.06 OBSTRUCTIONS BELOW GROUND

- A. In the event that underground boulders, underground construction work, or obstructions are encountered in any pit excavation work under this Contract, alternate locations may be selected by the Engineer at no additional cost to the Owner.

3.07 WATERING

- A. Plantings must be flooded with water twice within the first 24 hours of the time of planting and not less than twice per week until provisional acceptance.
- B. Suitable water for planting and maintenance will be the responsibility of the Contractor. The Contractor shall furnish his/her own hose and hose connections or other watering equipment.

3.08 MAINTENANCE

- A. Upon completion of planting and prior to provisional acceptance, remove from the site excess soil and debris and repair all damage resulting from planting operations.
- B. Maintenance shall begin immediately after any area is seeded and each plant is installed and shall continue until final acceptance. In any case, the minimum period of maintenance shall be 10 weeks after the last area has been planted. When entire stabilized area is installed, the Contractor shall request an inspection of the work by the Engineer to start a 10 week provisional acceptance and maintenance period.

- C. The Contractor shall keep all planted areas watered in good condition, reseeding and/or replanting all areas if and when necessary until a good healthy, uniform growth is established over the entire area, and shall maintain all areas in an approved condition until the end of the maintenance period. The maintenance period must occur during the growing season as previously defined.
- D. During the maintenance period, trees and shrubs shall be pruned, sprayed, fertilized, cultivated, and otherwise maintained and protected until provisional acceptance. Settled plants shall be reset to proper grade and position, planting saucer restored, and dead material removed. Defective work shall be corrected as soon as possible after it becomes apparent and as weather and season permit. Provisional acceptance and maintenance period shall begin upon review and approval of the entire completed installation.

3.09 INSPECTION AND PROVISIONAL ACCEPTANCE

- A. The Engineer will inspect all work for provisional acceptance, at the end of the 10-week maintenance period, upon the written request of the Contractor received at least 10 days before the anticipated date of inspection.
- B. Furnish full and complete written instructions for maintenance of the planting to the Owner at the time of provisional acceptance.
- C. After all necessary corrective work has been completed and maintenance instructions have been received by the Owner, the Engineer will certify in writing the provisional acceptance of the planting.

3.10 GUARANTEE PERIOD AND REPLACEMENTS

- A. All plants, including relocated material, shall be guaranteed by the Contractor for not less than two years from the time of provisional acceptance.
- B. At the end of this period, any plant that is missing, dead, not true to name or size as specified, or not in satisfactory growth, as determined by the Engineer, shall be replaced. In case of any question regarding the condition and satisfactory establishment of a rejected plant, the Engineer's decision is final. The Contractor will provide a guarantee for all replacement plants for at least one full growing season.
- C. All replacements shall be plants of the same kind and size as specified. They shall be furnished and planted as specified herein. The cost of replacement shall be borne by the Contractor except where it can be definitely shown that loss resulted from vandalism.
- D. Seeded areas shall be warranted for two years to be in a healthy, vigorous growing condition. If, during the original warranty period, seeded areas die or are unhealthy due to natural causes, failure of germination, etc., or in the opinion of the Engineer, shall be replaced at once and at the expense of the Contractor.

3.11 FINAL INSPECTION AND FINAL ACCEPTANCE

- A. At the end of the guarantee period, inspection will be made by the Engineer upon written request submitted by the Contractor at least 10 days before the anticipated date.

- B. The inspection by the Engineer will determine whether corrective work and/or maintenance shall continue in any area or manner.
- C. At the end of this period, any plant that is missing, dead, not true to name or size as specified, or not in satisfactory growth, as determined by the Engineer, shall be replaced. In case of any question regarding the conditions and satisfactory establishment of a rejected plant, the Engineer's decision is final. Furnish a guarantee for all replacement plants for at least one full growing season.
- D. All replacements shall be plants of the same kind and size as specified. They shall be furnished and planted as specified herein. The cost of replacement shall be borne by the Contractor except where it can be definitely shown that loss resulted from vandalism.
- E. Invasive and/or exotic plant species or vines (native or exotic) shall be removed.
- F. Planted and seeded areas not demonstrating satisfactory stands as outlined above, as determined by the Engineer, shall be renovated, reseeded and/or replanted and maintained meeting all requirements as specified herein.
- G. After all necessary corrective work has been completed, the Engineer will certify in writing the final acceptance of the planting.

END OF SECTION

SECTION 02901

MISCELLANEOUS WORK AND CLEANUP

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. This Section includes miscellaneous operations that are not specified in detail as separate items but can be sufficiently described as to the kind and extent of work involved. The Contractor shall furnish all labor, materials, equipment, and incidentals to complete the work under this Section.
- B. When applicable the Contractor shall perform the work in accordance with other sections of this Specification. When no applicable specification exists, the Contractor shall perform the work in accordance with the best modern practice and/or as directed by the Owner.
- C. The work of this Section includes, but is not limited to, the following:
 - 1. Construction and maintenance of any temporary access roads.
 - 2. Construction scheduling.
 - 3. Project record documents.
 - 4. Restoration and replacement of signs, lampposts, and mailboxes.
 - 5. Crossing and relocating existing utilities.
 - 6. Restoration of roadways and pavement.
 - 7. Restoration of sidewalks and curbing.
 - 10. Temporary facilities.
 - 11. Cleaning up.
 - 12. Incidental work.
- D. The work specified herein is not shown on the Contract Drawings. It shall be the Contractor's responsibility to develop his/her costs for this work based on site/field investigations prior to the Bid.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Materials required for this Section shall be the same quality of materials that are to be restored. Where possible, the Contractor may re-use existing materials that are removed and approved for reuse by the Owner.

PART 3 EXECUTION

3.01 CONSTRUCTION SCHEDULING

- A. Provide construction scheduling as required in Section 01300.

3.02 PROJECT RECORD DOCUMENTS

- A. Provide project record documents as required in Section 01720.

3.03 RESTORATION AND REPLACEMENT OF SIGNS, LAMPPOSTS AND MAILBOXES

- A. Existing signs, lampposts and mailboxes that may be damaged by the Contractor or removed by the Contractor during the course of construction shall be reinstalled in the same position and at the same location from which they were removed. Damaged items shall be replaced with an item equal to or better than the damaged items and the surrounding area shall be repaired to pre-existing conditions or better. Care shall be exercised in the reinstallation of all items to prevent damage to the newly installed work.

3.04 CROSSING AND RELOCATING EXISTING UTILITIES

- A. The Contractor shall furnish all labor, materials, equipment, and incidentals required in crossing and/or relocating culverts; water courses, including brooks and drainage ditches; storm drains; sewers; water mains and service lines; and other utilities and obstructions including, but not limited to, electric, telephone, TV cables, traffic control signals, irrigation systems, and gas services. This work shall include, but is not limited to, the following: bracing, hand excavation and backfill, sheeting and shoring, dewatering, compaction, restoration, location and protection of existing utilities, erosion and sedimentation control, traffic control, clean-up, and all else incidental thereto for which separate payment is not provided under other items in the Bid Form.
- B. In locations where existing utilities cannot be crossed without interfering with the construction of the work as shown on the Drawings, the Contractor shall remove and relocate the utility as directed by the Owner or cooperate with the utility companies concerned if they relocate their own utility.
- C. At pipe crossings and where designated by the Owner, the Contractor shall furnish and place compacted granular bedding material or concrete so that the existing utility or pipe is firmly supported for its entire exposed length. The granular bedding material or concrete shall extend to the mid-diameter of the pipe crossed.

3.05 RESTORATION OF ROADWAYS AND PAVEMENT

- A. The Contractor shall repair and/or replace existing public and private roadways disturbed by the construction in accordance with City of Norfolk standards. All City of Norfolk permits for work in the right-of-way shall be obtained before repairs begin. Paved drives (concrete, asphalt, decorative, etc.) shall be repaved to the limits and thicknesses existing prior to construction. Gravel drives shall be replaced and regraded to the limits and thicknesses existing prior to construction.

3.06 RESTORATION OF SIDEWALKS AND CURBING

- A. All sidewalks, which are disturbed by the Contractor's operations, shall be restored to their original condition by the use of similar or comparable materials and shall meet City of Norfolk standards.
- B. All existing curbing shall be protected. If necessary, curbing shall be removed and replaced after backfilling. Curbing which is damaged during construction shall be replaced with curbing

of equal quality and dimension at the Contractor's expense and shall meet City of Norfolk standards. Full lengths of curbing shall be replaced.

3.07 PROTECTION AND BRACING OF UTILITY POLES

- A. The Contractor shall be responsible for making all arrangements with the proper utility companies for the bracing and protection of all utility poles that may be damaged or endangered by the Contractor's operations. Work under this item shall include the related removal and reinstallation of guy wires, or support poles whether shown on the Drawings or not.

3.08 RESTORING EASEMENTS AND RIGHT-OF-WAYS

- A. The Contractor shall be responsible for all damage to public and private property due to his operations. The Contractor shall protect from injury any existing structures and property including, but not limited to, drainage piping and ditches, catch basins, head walls, yard culverts, walls, fences, cultivated shrubbery and vegetables, fruit trees, pavement, driveways, walkways, irrigation systems, underground facilities, such as water pipe, sewers, or other utilities which may be encountered along the route. If removal and replacement are required, it shall be done in a workmanlike manner so that replacement is equivalent to that which existed prior to construction.
- B. Existing lawn and sod surfaces damaged by construction shall be replaced. Loaming and seeding shall conform to Section 02930. These areas shall be maintained and reseeded, if necessary, until all work under this Contract has been completed and accepted. Any additional work required to restore property to the original condition shall be performed by the Contractor.
- C. Existing trees, shrubs, plants, and bushes outside of easements and disturbance limits shown on the Drawings shall be fully protected as specified in Section 01110. The work shall also include removing and replacing those trees, shrubs and bushes as indicated on the Drawings. It shall include the careful excavation of the root ball, which shall be wrapped with burlap while out of the ground. Replant them after backfilling the trench, stake them in an upright position and shall periodically water replanted trees, bushes and shrubs. Be fully responsible for ensuring that any and all trees, bushes and shrubs removed and replanted "take" and return to a viable state. Any replanted item that fails to "take" or that is so damaged as to be unsuitable for replanting shall be replaced, at no additional cost to the City, with a tree, bush or shrub equal to the one removed.
- D. The Owner will inspect all work for provisional acceptance upon the written request received at least 10 days before the anticipated date of inspection.
 - 1. After all necessary corrective work has been completed, the Owner will certify in writing the provisional acceptance of the planting.
- E. All plants shall be guaranteed for not less than 2 full years from the time of provisional acceptance.
 - 1. At the end of this period, any plant that is missing, dead, or not in satisfactory growth, as determined by the Owner, shall be replaced.
 - 2. All replacements shall be plants of the same kind and size. They shall be furnished and planted as specified herein. The cost of replacement shall be borne by the Contractor except where it can be definitely shown that loss resulted from vandalism or the property owner's failure to maintain planting as instructed.

3. At the end of the guarantee period, inspection will be made by the Owner upon written request submitted by the landscape contractor at least 10 days before the anticipated date.
4. After all necessary corrective work has been completed and tree staking has been removed, the Owner will certify in writing the final acceptance of the planting.

3.09 TEMPORARY FACILITIES

- A. The Contractor shall furnish, install, maintain and remove all temporary facilities required for the proper completion of the Contract as shown on the Drawings and as specified herein.

3.10 CLEANING UP

- A. The Contractor shall remove all construction material, excess excavation, buildings, equipment and other debris remaining on the job as a result of construction operations and shall restore the site of the work to a neat and orderly condition.

3.11 INCIDENTAL WORK

- A. The Contractor shall perform all incidental work not otherwise specified, but obviously necessary, for the proper completion of the Contract as shown on the Drawings and as specified herein.

END OF SECTION

SECTION 02955
STREAM AND WETLAND STABILIZATION AND PLANTING

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. Stream and wetland stabilization and planting will occur in all areas where earthwork has occurred or soil has been disturbed within the stream and wetlands, except for the bottom of the stream bed. Stream and wetland planting will occur in additional areas as indicated on the project plans.
- B. Furnish all labor, materials, equipment and incidentals required to install erosion control measures, place specified topsoils, finish grade, apply soil amendments, install plant stock, apply seed and mulch, and maintain the restoration areas as shown on the Drawings and as specified herein.
- C. Restore all wetland areas which are temporarily altered by construction activities including excavation, clearing and trenching of wetlands during the course of construction to equal or better than that condition which existed previous to construction. All restoration and replication work resulting from the Contractor's activities shall be at no additional cost to the Owner. Any additional restoration required, other than that shown on the drawings, must be approved by the Engineer prior to installation.
- D. The work includes, but is not limited to the following:
 - 1. Procurement of all applicable licenses, permits, and fees.
 - 2. Ascertainment of utility locations prior to construction.
 - 3. Supplying topsoil as specified herein for all areas to be vegetated. All topsoil preparation, testing, conditioning, fertilization, and insuring the overall quality of the material. Topsoil stockpiled from other construction operations may be used.
 - 4. Soil preparation and fine grading.
 - 5. Supplying seed mixes and placing seed, fertilizer, and lime as specified herein
 - 6. Furnish and installation of plant materials and natural fiber mat as shown on the Drawings and specified herein.
 - 7. Excavate planting pits.
 - 8. Furnish and plant trees, shrubs and herbaceous material.
 - 9. Prune plant materials as specified.
 - 10. Supplying and spreading mulch as specified herein.
 - 11. Maintenance and guarantee of all stabilization materials and plantings.

12. Final cleanup and all other work required to complete the requirements of the Drawings and this Section.

1.02 RELATED WORK

- A. Site preparation including clearing, grubbing and stripping is included in Section 02100.
- B. Earthwork is included in Section 02200.
- C. Erosion and sedimentation control is included in Section 02276.
- D. Log Vanes are in Section 02273.
- E. Upland Planting is in Section 02900.
- F. Upland Loaming and Seeding is in Section 02930.
- G. Copies of all environmental permits are included in Appendix A, at the end of the project manual.

1.03 SUBMITTALS

- A. Submit, in accordance with Section 01300, the following:
 1. Materials List: Submit shop drawings for all materials and equipment furnished under this section, as well as a list of all plants, live stakes, and seed (including product label information) to be installed, including names and addresses of sources, to Engineer within 21 calendar days after receipt of Notice to Proceed.
 2. State Nursery Inspection Certificates and samples of material for inspection and acceptance upon Engineer's request for inspection and approval.
 3. Certification by the landscaping contractor that all plant stock obtained for this work is the plant indicated and of quality as specified.
 4. Documentation showing that the landscaping contractor performing the work has successfully completed at least two projects of this scope within the last two years and showing that their main business is landscaping.
 5. Submit warranty in accordance with Section 01740 and as specified in Paragraph 1.08 furnished in this Section.

1.04 DEFINITIONS

- A. Stream and Wetland stabilization and planting occurs where construction activities will temporarily alter the existing stream and wetland area. This requires restoration of topography, soil structure and vegetation as specified in the Drawings and herein.
- B. Stream and wetland planting occurs in one area where there will be no grading activities, as shown on the Drawings.

- C. Installation Inspection: The Engineer shall inspect all work performed under this Section at the completion of installation, upon the written request of the Contractor received at least 10 days before the anticipated date of inspection. The Engineer shall inspect said work for compliance with the plans and specifications specifically with regard to number of plants, plant sizes, species, and location. Any and all corrective work identified during the inspection shall be performed at no additional cost to the Owner.
- D. Final Inspection: The Engineer will provide a wetland scientist to inspect all Work performed under this section at the completion of two complete growing seasons, approximately April 15 to approximately October 15, following Installation Inspection. The Engineer shall inspect all areas for compliance with the Drawings and Specifications and permit requirements.

1.05 REFERENCE STANDARDS

- A. American Standard for Nursery Stock, ANSI Z60.1
- B. Tree and Shrub Transplanting Manual by the International Society of Arboriculture (ISA)
- C. American National Standards Institute (ANSI) Standards for Tree Care Operations, ANSI A300
- D. American Society for Testing and Materials (ASTM) Standard Specification for Topsoil Used for Landscaping Purposes, ASTM D5268
- E. ANSI A-300 Pruning Standards
- F. Where reference is made to one of the above standards, the revision in effect at the time of bid opening shall apply.

1.06 PROTECTION OF EXISTING FEATURES

- A. Protect all existing site features including, but not limited to, existing buildings, equipment, underground utilities, walls, materials, trees, etc. Any existing site features damaged by willful or negligent acts of Contractor shall be replaced or repaired in a manner satisfactory to the Engineer and at no additional cost to the County.
- B. The above provision applies to on-site damage as well as to that which may occur to adjacent properties.
- C. Tree Protection Standards During Construction:
 - 1. Accidental Poisoning: During the construction, Contractor shall not cause, or permit the cleaning of equipment or material, or the storage or disposal of waste material including, but not limited to, paints, solvents, asphalt, concrete, mortar, or any other material harmful to the life of a tree, within the root zone of each tree, or group of trees.
 - 2. Root Pruning Specifications: All pruning shall be performed by or under the supervision of an ISA certified arborist. ANSI A-300 Pruning Standards should be strictly adhered to. Each final cut must be made as cleanly as possible for all roots over 3-in in diameter using the following method:
 - a. The line of excavation will be drawn out and appropriate excavation equipment used to clear the area at least 6-in in front of the actual finished excavation line. Roots can then be cut using tools such as axes, stump grinders, or trenchers.

- b. Each root over 3-in in diameter will then be cut cleanly back to the final excavation line using a stump grinder operated by an experienced, licensed arborist. A sharp hand or bow saw is acceptable for roots under 3-in in diameter. Axes and trenchers do not cut roots cleanly and will not be used for final
 - c. If excavation causes pruned roots over 1.5" in diameter to remain exposed for more than 24 hours, roots on tree side shall be kept moist. Backfill with topsoil, cover with moist mulch, or drape with wet burlap.
- 3. Tree protection fencing shall be installed at a minimum radius of the Critical Root Zone (CRZ) of trees (CRZ defined as radius 1.0' (ft) per caliper inch at breast height from trunk of tree).
- 4. Signage for tree protection is necessary every 50' (ft) – "Do Not Enter Tree Protection Area"
- 5. Tree protection fencing shall not be violated for the entire duration of the project without approval from the Owner.
- 6. No damaging attachments, wires, signs, permits or other objects may be fastened by any means to any tree preserved on this project.
- 7. The storing or parking of vehicles, supplies or equipment under trees is not permitted.

1.07 SITE CONDITIONS

- A. Protection: Determine location of all underground utilities prior to installation of plants. Avoid damage to utility lines by hand excavating in close proximity to lines.
- B. Sequencing: Coordinate installation of plants with seeding work to ensure that damage will not occur. Install plants after final grades are established. Plants installed through natural fiber matting or erosion control blanket should be installed after seeding and matting/blanket installation. Plants installed in areas that will not receive natural fiber matting or erosion control blanket should be installed prior to seeding.
- C. Environmental Conditions: Contractor shall inspect planting areas to verify soils, drainage, and compaction. Start of planting work constitutes acceptance of these conditions.

1.08 WARRANTY

- A. For a period of two years from the date of Substantial Completion, the Contractor warrants to the Owner that the stream and wetland stabilization and planting conforms to these specifications and is free from defects in materials and workmanship. The Contractor shall provide maintenance during the warranty period in accordance with Paragraph 3.12. The Contractor shall inspect the work at the beginning and end of each growing season and shall replace, at no additional cost to the Owner, any work found to be defective within said warranty period. Such replacement shall include the cost of removal and reinstallation.
- B. Trees, shrubs, ground covers, and other plant materials are to be guaranteed to root and thrive free from defects from any cause until the end of the warranty period.

- C. Plants must be replaced when they are no longer in a satisfactory condition as determined by the Engineer prior to final acceptance and prior to the end of the warranty period. Make replacements within 7 days of notification from the Engineer unless approved otherwise.
- D. All replacements shall be of the same kind and size as originally specified and shall be installed as described in the contract documents. Repairs and replacements shall be made at no expense to the Owner.
- E. Guarantee shall apply to originally specified and installed plants, any substitutions, and other landscape materials, and any replacements made during the construction period and during the warranty period.
- F. Live stakes shall be evaluated during the autumn after planting (September) and replacement cuttings shall be done while dormant, during the following early spring of the following year. Replacement live stakes must be installed prior to April 1. The Contractor shall remove and replace dead or dying live stakes as directed.
- G. Herbicide: Coordinate type of herbicide with the Engineer. Use of any herbicide requires approval from the Engineer prior to application.

1.09 PLANTING TIME AND COMPLETION

- A. Selected tree species shall be wild type or of a cultivar that is superior in form and disease resistant.
- B. All plant material shall be free of all pests, diseases, and cankers, in healthy condition, and free of mechanical damage at the time of planting.
- C. Plants shall be planted only when weather and soil conditions permit and in accordance with locally accepted practices, and as approved by the Engineer.
- D. Install frost-tender plants only after danger of frost is past or sufficiently before frost season to allow for establishment before first frost. Do not install plants in frozen soil. Do not plant between May 15 and September 15 unless prior written approval from the Engineer has been obtained. Do not plant when ground is frozen.
- E. Trees shall be planted in same growing season in which they were dug.
- F. Live Staking: Install live stakes while dormant in early spring prior to April 1.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Topsoil (Loam)
 - 1. Topsoil stockpiled under other Sections of this division may be used as approved by the Engineer, but the Contractor shall furnish additional topsoil at his/her own expense, if required. Stockpiled topsoil must conform to all specifications for topsoil as described herein. Contractor shall screen existing topsoil with a 1-in screen prior to reuse. Foreign

materials must be removed from any reused existing topsoil. Stockpiled topsoil not used as specified herein shall be removed from the site.

2. Topsoil from existing wetland areas must be stored separately from topsoil from upland areas.
3. Additional topsoil from offsite shall be fertile, friable, natural topsoil typical of the locality and shall be obtained from a well-drained site that is free of flooding. It shall be without admixture of subsoil or slag and free of stones, lumps, plants or their roots, sticks, clay, peat and other extraneous matter. Topsoil shall be tested for nutrient fertilizer requirements and pH requirements, shall have a pH between 6.0 and 7.0 and shall contain not less than 5 percent or more than 8 percent organic matter as determined by loss of ignition or moisture-free samples dried at 100 degrees Celsius. The topsoil texture shall be screened of stones larger than 1-inch and shall conform to 'Loam' as defined by the USDA.
4. Organic fertilizer and lime shall be spread and incorporated as per soil test recommendations after the topsoil is spread but prior to fine grading.
5. Inorganic fertilizer may not be added to soil except upon approval from the Engineer.
6. No topsoil shall be delivered or spread in a frozen or muddy condition.
7. Topsoil shall conform to ASTM D5268.

B. Organic Rich Loam

1. Organic rich loam shall be used to supplement stockpiled wetland topsoil for topsoil for the final one foot grade in the wetland areas, if needed. Organic rich loam shall be friable and capable of promoting and supporting healthy plant growth when mixed with soil conditioners as specified. Organic rich loam shall be manufactured by mixing loam and organic amendments for loam, as specified, to raise the organic content to between 8 percent and 10 percent.
2. Organic rich loam shall be free of slag, stones 1-inch or greater in dimension, plants or their roots, sticks, clay clods, toxic substances, or any material harmful to plant growth. Organic rich loam shall be classified as loam or silt loam using the USDA Textural Classification System and Particle Size Class triangle.
3. Organic rich loam shall contain between 8 and 10 percent organic matter. The organic matter content for organic rich loam shall be by weight as determined by loss on ignition of moisture free test samples oven dried to a constant weight at a temperature of 100 degrees Centigrade. To adjust organic matter content, the loam may be amended with organic amendments.
4. Organic rich loam shall have a pH between 5.5 and 7.5.
5. Soluble salts shall not be greater than 160 ppm.
6. Organic Amendments for organic rich loam
 - a. Compost material may be used as an organic amendment. The compost shall be a stable, humus-like material produced from the aerobic decomposition of organic

residues. The residues may include biosolids as well as yard wastes, and agricultural wastes. The compost shall be of a dark brown to black color and be capable of supporting plant growth. The composted material shall have been stabilized so as to not have an unpleasant odor. An organic amendment not stabilized as specified herein and having an objectionable odor may be rejected at the discretion of the Engineer.

- b. The compost moisture content shall be such that no visible free water or dust is produced when handling it and the carbon/nitrogen ration shall be in the range of 11/1 to 15/1.
- c. Stability must be assessed by a CO₂ evolution test. Protocols for the test are specified in the final Model Procurement Guidelines for Source Separated Compost (CONED 1996) guidelines. For the CO₂ evolution test, the compost respiration shall be no more than 5 mg CO₂-C/g BVS day. Compost which does not meet the criteria shall not be used.
- d. The compost shall contain at least 40 percent organic matter (dry weight) and 100 percent of the material should pass a 3/8-inch (or smaller) sieve. Debris such as metal, glass, plastic, wood (other than residual chips), asphalt, or masonry are not acceptable and compost containing such material will be rejected.

C. Amendments for Topsoil and Organic Rich Loam

1. Commercial organic fertilizer, humus, sand, or other additives shall be used to counter act soil deficiencies as recommended by the soil analysis and as directed by the Engineer.
2. Organic fertilizer shall be delivered to the site in the original unopened containers each showing the manufacturer's certificate of compliance and guaranteed analysis and shall comply with the State and United States Fertilizer Laws. Store fertilizer so that when used it shall be dry and free flowing. Fertilizer shall contain not less than the percentages of weight of ingredients or as recommended by the soil analysis.
3. Lime shall be ground limestone of an approved agricultural dolomite limestone containing not less than 85% of total calcium or manganese carbonates. Limestone shall be ground to such fineness that 50% will pass through a 100 mesh sieve and 95% will pass through a 20 mesh sieve.
4. Humus for topsoil shall be natural humus, reed peat or sedge peat which has been stockpiled for at least one year prior to its use. It shall be free from excessive amounts of zinc, low in wood content, free from hard lumps and in a shredded or granular form. According to the methods of testing of A.O.A.C., latest edition, the acidity range shall be approximately 5.5 pH to 7.6 pH and the organic matter shall not be less than 85% as determined by loss on ignition. The minimum water absorbing ability shall be 200% by weight on an oven dry basis.

D. Water

1. Water used in this work shall be furnished by the Contractor and shall be suitable for irrigation and free from ingredients harmful to plant life. Hose, labor, materials and other watering equipment required for the work shall be furnished by the Contractor.
2. Watering volumes should be based upon delivery of 1" of moisture per week to the tree if precipitation does not meet that amount during the active growing season defined as April 15th through November 1st until trees are established.

3. All mandatory water restrictions apply & non-municipal waters shall be used if at all possible.
- E. Mulch shall be as specified in Section 02900.
- F. Natural Fiber Matting as specified in Section 02276.

2.02 PLANT MATERIALS

- A. All plant stock shall be furnished in the condition required in Paragraph 2.02B and accepted by the Engineer. All plant stock shall be labeled by common name and Latin binomial and certified as the correct species by the plant supplier. All plant stock shall conform to standards specified in Paragraph 1.05.
- B. Plant Materials List
 1. A complete list of plantings, seed, and necessary landscape material is provided on the Drawings.
- C. Seed
 1. Seed shall be labeled in accordance with USDA Rules and Regulations under the Federal Seed Act and applicable state seed laws. Seed shall be furnished and delivered pre-mixed and contain species and proportions as indicated in the Drawings, be from the same or previous year's crop; each variety of seed shall have a percentage of germination not less than 90, a percentage of purity not less than 85 and shall have not more than 1 percent weed content and contain no noxious weeds. The mixtures shall consist of percentages of pure live seed as indicated in the Drawings.
 2. A manufacturer's certificate of compliance to the specified mixes shall be submitted by the manufacturer for each seed type. These certificates shall include the guaranteed percentages of purity, weed content and germination of the seed and also the net weight and date of shipment. No seed may be sown until the certificates have been submitted and approved.
- D. Trees, Shrubs, and Herbaceous Materials
 1. Furnish plants in quantities required to complete the work as indicated on the Drawings.
 2. Nomenclature is in conformance with standard horticultural practice in the area. Plants are to be delivered to the site with tags bearing the botanic name as indicated by the plant list. In all cases, botanical names take precedence over common names.
 3. All plants shall be typical of their species or variety and shall have a normal habit of growth. Plants shall be sound, healthy and vigorous, well-branched, and densely foliated when in leaf; shall be free of disease, insect pests, eggs, or larvae, and shall have healthy, well-developed root systems. Plants must conform to the requirements of the American Standard for Nursery Stock, ANSI Z60.1. All plants are subject to inspection.
 4. Plants shall be nursery grown under climatic conditions similar to those in the locality of the project and shall conform to the variety and sizes indicated.

5. All plants shall be freshly dug or container grown. No heeled-in plants or plants from cold storage other than dormant willow stakes shall be used. Plants shall be healthy and vigorous, well-branched and densely foliated when in leaf; shall be free of disease, insect pests, eggs or larvae and shall have healthy, well-developed root systems. All parts of the plant shall be moist and shall show active green cambium when cut to demonstrate plants are healthy and vigorous. Plants shall be prepared for shipment in a manner that will not cause damage to branches, shape, and future development after planting.
6. Balled and burlapped plants shall be nursery grown stock adequately balled with firm, natural balls of soil in sizes and ratios conforming to ANSI Z60.1. Balls shall be firmly wrapped with non-treated burlap, secured with wire or jute. Balls shall be drum laced for sizes 30-in or greater. Broken balls will not be accepted.
7. Container-Grown Stock shall have been grown in a container long enough for the root system to have developed sufficiently to hold its soil together, firm and whole. No plants shall be loose in the container.
8. If larger plants are used, upon acceptance by the Engineer, the spread of roots or ball of earth shall be increased in proportion to the size of the plant.
9. The height of the trees, measured from the crown of the roots to the top of the top branch, shall not be less than the minimum size designated. The trunk of each tree shall be a single trunk growing from a single unmutilated crown of roots unless a multi-trunk tree is specified. No part of the trunk shall be conspicuously crooked as compared with normal trees of the same variety. The trunk shall be free from sun-scald, frost cracks, or wounds resulting from abrasions, fire, or other causes. No pruning wounds shall be present having a diameter of more than 2-in and such wounds must show vigorous bark on all edges.
10. Plants shall be handled so that roots are adequately protected at all times from drying out and from other injury. Protect balls of balled plants which cannot be planted within 12 hours of delivery with soil or other suitable materials. Plants must be stored in the shade. Keep all plant roots moist before, during, and after planting.

E. Live Stakes

1. Species used shall be harvested during dormancy when no leaves are present. If the construction/planting sequence allows, the cuttings may be propagated at a nursery over winter to develop roots before planting.
2. Live stakes shall be free from all side branches. Stakes shall be 0.5-inch to 1-inch in diameter and 2- to 3-feet long with the bottom end cut off at an angle and the top end with a straight cut.
3. Live branch cuttings shall consist of species as identified on the drawings.
4. The use of chainsaws, weed whips with metal blades, loppers, and pruners shall be permitted, provided that they are used in such a manner that they leave clean cuts. Live plant materials shall be cut and handled with care to avoid bark stripping and trunk wood splitting. Cuts shall be made 8-in to 10-in from the ground when cutting from the approved, natural growing, source sites. Cuts shall be made flat or at a blunt angle. This assures that the source sites shall regenerate rapidly.

5. Live branch cuttings shall be bound together securely with twine at the collection site, in groups, for easy handling and for protection during transport. Live branch cuttings shall be grouped in such a manner that they stay together when handled. Five cuttings shall be allowed per bundle.
6. During transportation, the live cut branch groups shall be placed on the transport vehicles in an orderly fashion, to prevent damage and to facilitate handling. The live cut plant materials shall be covered with a tarp or burlap material during transportation.
7. Upon arrival at the construction site, live branch cuttings shall be inspected for acceptability. Live cut material shall be collected from sources that shall be approved prior to the commencement of cutting operations. Only healthy and disease-free stock shall be acceptable.
8. All cut plant materials shall arrive on the job site within 8 hours of cutting. Prior to planting, the cuttings shall be soaked by submerging at least 2/3 of their length (from the bottom of the cuttings) in containers of water, free from any harmful oil, chemical, sprays, or other materials. The cuttings shall be kept in the shade at all times.
9. Live stakes not installed on the day of arrival at the job site shall be stored and protected until installation. Unless otherwise specified, all live plant materials must be used within 24 hours after cutting. Outside storage locations shall be continually shaded and protected from the wind. Live cut plant material shall be heeled in moist soils, or kept in water. Live cut materials shall be protected from drying at all times.

2.03 INSPECTION OF PLANT MATERIALS

- A. Inspection of plants before digging shall be at the option of the Engineer. Be present, if requested by Engineer, for inspection of plants at nursery.
- B. Plants shall be subjected to inspection and approval upon delivery for conformity to specified requirements as to quality, size and variety. Such approval shall not impair the right of inspection and rejection during the progress of the work.
- C. Plants shall be accompanied by State Nursery inspection certificates.
- D. No plants will be accepted with plastic burlap or if the ball is cracked or broken.

PART 3 EXECUTION

3.01 GENERAL

- A. Reclaim areas where construction work has been completed as soon as possible after completion of the work. Temporary grading and seeding may be required to satisfy the requirements of the Commonwealth of Virginia erosion and sediment control laws and regulations.
- B. Weed and Debris Removal: All ground areas to be planted shall be cleaned of all weeds and debris prior to any soil preparation or grading work. Weeds and debris shall be disposed of offsite.

- C. Contaminated Soil: Do not perform any soil preparation work in areas where soil is contaminated with cement, plaster, paint, or other construction debris. Bring such areas to the attention of the Engineer and do not proceed until the contaminated soil is removed and replaced.

3.02 STREAMBANK SOIL PREPARATION AND FINAL GRADING

- A. The Contractor shall remove all construction material, excess excavation, fencing, equipment and other debris including, but not limited to, branches, paper, and rubbish remaining on the job as a result of construction operations.
- B. Grades: Finish grades shall conform to site grading plans and produce a smooth even surface without abrupt changes, including the interface with the adjacent undisturbed landscape. Minor adjustments of finish grades shall be made at the direction of the Engineer, if required.
- C. Slopes: Tops and toes of all slopes shall be rounded to produce a gradual and natural-appearing transition between relatively level areas and slopes.
- D. The subgrade of all areas to receive topsoil and seed shall be established below final grade such that the placement of topsoil as specified herein results in finish grades in accordance with site grading plans in the Drawings.
- E. The subgrade of all areas to receive topsoil and seed shall be raked and all rubbish, sticks, roots and stones 2 inches or larger shall be removed. Subgrade surfaces shall be harrowed, raked or otherwise loosened to a depth of 6 inches. Large stones and boulders shall be removed or buried 18 inches below finished grade. Subgrade shall be inspected and approved by the Engineer before topsoil is placed.
- F. Topsoil shall be placed over all disturbed areas of limits of work above the toe of the stream bank (i.e. except for the unplanted stream bed), so that after natural settlement and light rolling it will conform smoothly to the lines, grades and elevations shown on the Drawings. No topsoil shall be spread in water or while frozen or muddy. Topsoil shall not be handled or moved when in a wet or frozen condition.
 - 1. Minimum depth of topsoil shall be 4 inches.
 - 2. Topsoil structure shall not be destroyed through excessive and unnecessary handling or compaction. Deterioration of soil structure will result in rejection of topsoil for use.
- G. After topsoil has been spread, it shall be carefully prepared by scarifying or harrowing and hand raking. All large stiff clods, lumps, brush, roots, stumps, litter and other foreign material equal to or greater than 1 inch or larger in every dimension shall be raked up from the topsoil areas and removed from the premises by the Contractor. The areas shall also be free of smaller stones, in excessive quantities, as determined by the Engineer. The whole surface shall then be raked to a smooth, uniform surface. Finished grading work shall not be done during unsuitable weather. All depressions caused by settlement shall be filled with additional topsoil and the surface shall be regraded and raked until a smooth and even finished grade is created.
- H. Resupplying of topsoil to eroded or settled areas to finish grade shall be the responsibility of the Contractor.

- I. Soil Conditioning: After soil preparation has been completed and high and low spots graded, add soil amendments (as recommended by laboratory analysis) and rototill, making repeated passes with the cultivator to the depth specified until the amendments have been thoroughly mixed.

3.03 WETLAND SOIL PREPARATION AND FINAL GRADING

- A. Restore all existing wetland areas which are temporarily altered by construction activities, including excavation, clearing, and trenching of wetlands in the course of construction activities. Provide erosion control; replace wetland topsoil; establish finish grade; apply soil amendments; plant balled and burlapped, potted and bare root plant stock; apply seed and mulch; and maintain the wetlands restoration area. Restoration shall proceed as follows:
 - 1. During any excavation, trenching or ditching in wetlands, the existing wetland topsoil shall be scraped off and segregated from subsoils.
 - 2. After rough grading is completed, restore subgrades to match preconstruction conditions (8 to 12-in below finished grade).
 - 3. The finished grade shall be established using Organic Rich Loam and the wetland topsoil removed from the temporary wetland alteration area and stockpiled separately from subsoils. The areas shall be rolled with a hand roller weighing not more than 100 pounds per foot of width and raked smooth. The finish grades shall match preconstruction grades and transition smoothly to the surrounding undisturbed wetland contours.
 - 4. In areas where wetlands require only planting and not grading, scarify the ground surface to ensure proper seed to soil contact.

3.04 SEED APPLICATION

- A. Seed all disturbed areas above the toe of the streambank and in the wetlands as shown on the Drawings, prior to installation of natural fiber matting or erosion control blanket.
- B. No seeding should be undertaken in windy or unfavorable weather, when the ground is too wet to rake easily, when it is in a frozen condition, or too dry.
- C. Areas to be seeded shall be raked and all rubbish, sticks, roots, and stones larger than 2 inches shall be removed.
- D. Immediately following surface preparation the seed shall be uniformly hand broadcast and lightly raked into the surface. Lightly roll the surface and water with fine spray. Seed shall be applied at the rates provided on the Drawings.
- E. The Contractor shall keep all seeded areas watered and in good condition. Reseeding shall be done if and when necessary until a good, healthy, uniform growth is established over the entire area seeded.
- F. On slopes, the Contractor shall provide against washouts by an approved method. Any washout which occurs shall be regraded and reseeded at the Contractor's expense until good sod is established.

- G. Temporary Seeding shall be performed as necessary to comply with all applicable regulations, the sedimentation and erosion control plan and applicable permits. Tall fescue (*Festuca arundinacea*), red fescue (*Festuca rubra*), or sheep fescue (*Festuca ovina*) may not be used for temporary seeding in non-turf areas.
- H. The soil on which the seed is laid shall be reasonably moist and shall be watered if necessary or so directed by the Engineer.
- I. All seeded areas shall be watered to maintain moisture in the seed bed until full germination has been achieved. Continue to water throughout the maintenance period as required. The Contractor will be required to furnish irrigation equipment as required and approved by Engineer to water the seeded area for proper establishment.
- J. After seedlings have appeared, reseed all areas and parts of areas which fail to show a uniform stand of vegetation. Reseed repeatedly until all areas are covered to the satisfaction of the Engineer. An established seeded area shall have a minimum count of 60 plants per square foot.
- K. When protection of newly graded areas is necessary at a time which is outside of the normal seeding season, the Contractor shall protect those areas by whatever means necessary (such as straw applied with a non-tar tackifier) or by other measures as approved by the Engineer.

3.05 EROSION CONTROL MATTING

- A. After final grading and seeding, all disturbed wetland and stream areas shall be protected with natural fiber matting or slope erosion control blanket as outlined in this Paragraph.
- B. Natural fiber matting shall be installed immediately upon final grading in all constructed stream channels and disturbed wetland areas as shown on the Drawings and as directed by the Owner in accordance with manufacturer's instructions. The Contractor shall provide a smooth soil surface free from stones, clods, or debris that will prevent the contact of the mat with the soil. The blankets shall be unrolled and applied in the direction of water flow, without stretching such that it will lie smoothly but loosely on the soil surface. Blankets shall be placed parallel to the stream flow within the stream channel and wetland area and staked together in accordance with manufacturer's instructions. Side overlaps shall be 4 in minimum. The biodegradable stakes shall be driven vertically into the ground, spaced according to the manufacturer's recommended most dense pattern, at least approximately two linear feet apart, on each side, and one row in the center alternately spaced between each side. Upper and lower ends of the matting shall be buried to a depth of 6 inches in a trench. The bottom of the fold shall be 6 inches below the ground surface. Stake on both sides of fold. Where the matting must be cut or more than one roll length is required in the channel, turn down upper end of downstream roll into a slit trench to a depth of 6 inches. Overlap lower end of upstream roll 4 inches past edge of downstream roll and stake.
- C. Slope erosion control blanket shall be installed on all slopes outside the channel steeper than 6H:1V and as directed by the Engineer in accordance with manufacturer's instructions. The area to be covered shall be properly prepared and seeded with permanent vegetation before the blanket is applied. When the blanket is unrolled, the netting shall be on top and the fibers in contact with the soil over the entire area. The blankets shall be applied in the direction of water flow and fastened using the biodegradable stakes. Side overlaps shall be 4 in minimum. The stakes shall be driven vertically into the ground, spaced approximately two linear feet apart, on each side, and one row in the center alternately spaced between each side. Upper and lower ends

of the matting shall be buried to a depth of 4 in in a trench. Erosion stops shall be created every 25-ft by making a fold in the fabric and carrying the fold into a silt trench across the full width of the blanket. The bottom of the fold shall be 4 in below the ground surface. Stake on both sides of fold. Where the matting must be cut or more than one roll length is required in the swale, turn down upper end of downstream roll into a slit trench to a depth of 4 in. Overlap lower end of upstream roll 4 in past edge of downstream roll and stake.

- D. On slopes, the Contractor shall provide against washouts by an approved method. Any washout which occurs shall be regraded and reseeded at the Contractor's expense until good sod is established.

3.06 DIGGING, HANDLING AND PROTECTION OF PLANTS

- A. Plants shall be dug with firm natural balls of earth, of sufficient diameter and depth to include most of the fibrous roots and conforming to the standards of ANSI Z60.1.
- B. Roots or balls of plants shall be protected at all times from sun and from drying winds.
- C. Plants which cannot be planted immediately upon delivery shall be set on the ground and be protected with soil, bark mulch, or other acceptable material.
- D. No plant shall be bound with wire or rope at any time so as to damage the bark or break branches.

3.07 PLANTING OPERATIONS

- A. Stake out locations in the field as indicated on the Drawings and secure the Engineer's approval before excavating plant pits. Contractor will locate and install all plant material according to the Drawings. Actual planting locations may vary due to in-field conditions and as directed by the Engineer.
- B. Planting pits will be circular in outline with roughened vertical or sloped sides. Remove an area of the erosion control mat equal to the size of the planting pit. Dig a hole equal to the depth and three times the diameter of the root ball. Planting pits will be dug so that the top of the root ball is level or approximately 1- to 2-in above final grade to account for settling. Tree pits shall be 2-ft greater in diameter than the root ball of the tree. Backfill material for all pits shall consist of the existing material (loam) as excavated from the pit.
- C. Planting
 - 1. Plants shall be set in center of pits plumb and straight and at such a level that after settlement, the crown of the plant ball will be at the surrounding finished grade.
 - 2. For balled and burlapped (B&B) material, untie and remove burlap from the root ball. Do not fold burlap or bury in tree pit. Remove all wire, rope, and/or plastic burlap from the root ball. Remove twine from around tree trunks. All materials or ropes must be completely removed from root balls and trunks.
 - 3. For container plants, remove and dispose of containers prior to planting. To encourage immediate root development, the outer one-half inch of the root ball shall be gently loosened. Prune away any circling roots.

4. All burlap, rope, wire and similar materials shall be removed from all plants and disposed of off-site.

D. Backfilling Plants

1. When plants are set, loam shall be tamped lightly. Loam shall not be packed so firmly as to drive out all the fine air spaces needed for a well aerated soil.
2. Loam shall be backfilled in layers of not more than 9-in and each layer watered sufficiently to settle before the next layer is put in place.
3. To complete backfilling, ensure that trunk flare is completely exposed and that the top of the root ball is not covered with loam. Immediately after the plant pit is backfilled, a saucer or shallow basin slightly larger than pit shall be formed with a ridge of soil to facilitate and contain watering.
4. Trees will include a water basin or berm no less than 6-in in height placed at the outer limit of the root ball. Surplus soil remaining after backfilling is completed will be used to construct the water basin. Berms created on flat ground should close around the entire circumference of the planting pit. Berms occurring on a sloped surface will be open to the uphill side and built in such a way that they capture and retain water. Water basins will mulched in accordance with the Drawings
5. Directly after backfilling/planting, each plant will be deep watered at a rate of 15 gallons per cubic yard of plant basin.

3.08 PRUNING AND MULCHING

- A. Each plant shall be pruned at the time of planting in accordance with ANLA standards to remove dead or broken branches and to preserve the natural character of the plant and as directed by the Engineer.
- B. Pruning shall be done with clean, sharp tools.
- C. Cuts over 1-in in diameter shall be painted with an approved tree paint. Paint shall cover all exposed cambium as well as other exposed living tissue. Paint shall be waterproof, adhesive and elastic, antiseptic, free from kerosene, coal tar, creosote, or any other material injurious to the life of the tree.
- D. Immediately after planting operations are completed, all tree pits shall be mulched with a 3-in layer of the specified mulch.

3.09 LIVE STAKING

- A. The Contractor will use augers, stingers, hand-held dibble bars, or similar method to prepare planting pits for live stakes. A cut should be made in the natural fiber matting or erosion control blanket sufficient to allow insertion of the dibble bar and live stake. Live stakes will be inserted in the ground with the buds pointing upward and to a sufficient depth such that the bottom of the cutting penetrates the water table. Earth will be tamped around the cuttings or bundles to ensure proper soil contact. Following installation, all live stakes or bundles will be pruned as indicated in the Drawings

3.10 OBSTRUCTIONS BELOW GROUND

- A. In the event that underground boulders or obstructions are encountered in any pit excavation work under this Contract, alternate locations may be selected by the Engineer and plants shall be installed therein.

3.11 WATERING

- A. Plantings shall be flooded with water twice within the first 24 hours of the time of planting.
- B. Apply water at an average rate of 1-in per week.
- C. Irrigation water for planting and maintenance shall be provided by the Contractor and shall be free from ingredients harmful to plant life. The Contractor shall furnish his/her own hose and hose connections or other watering equipment.

3.12 MAINTENANCE

- A. Upon completion of planting and prior to provisional acceptance, remove from the site excess soil and debris and repair all damage resulting from planting operations.
- B. Maintenance shall begin immediately after any area is seeded and each plant is installed and shall continue until final acceptance. In any case, the minimum period of maintenance shall be 10 weeks after the last area has been planted. When entire stabilized area is installed, the Contractor shall request an inspection of the work by the Engineer to start a 10 week provisional acceptance and maintenance period.
- C. The Contractor shall keep all planted areas watered in good condition, reseeding and/or replanting all areas if and when necessary until a good healthy, uniform growth is established over the entire area, and shall maintain all areas in an approved condition until the end of the maintenance period. The maintenance period must occur during the growing season as previously defined.
- D. During the maintenance period, trees and shrubs shall be pruned, sprayed, fertilized, cultivated, and otherwise maintained and protected until provisional acceptance. Settled plants shall be reset to proper grade and position, planting saucer restored, and dead material removed. Defective work shall be corrected as soon as possible after it becomes apparent and as weather and season permit. Provisional acceptance and maintenance period shall begin upon review and approval of the entire completed installation.
- E. Maintenance of seeded areas shall include: reseeding, watering, and weeding.
- F. Watering of seeded areas - Seeded areas shall be inspected daily and watered at the first signs of stress. This attention shall be for the entire installation and maintenance period.
 - 1. First week: The Contractor shall provide all labor and arrange for all watering necessary for the seed to take. In the absence of adequate rainfall, watering shall be performed daily or as often as necessary during the first week and in sufficient quantities to maintain moist soil to a depth of at least 4 inches. Watering should be done early in the day and should be avoided during the heat of the day.

2. Second and subsequent weeks: The Contractor shall water as required to maintain adequate moisture, until final acceptance, in the upper 4 inches of soil.
3. Watering shall be done in such a manner which will provide uniform coverage, prevent erosion due to application of excessive quantities over small areas, and prevent damage to the finished surface by the watering equipment. The Contractor shall furnish sufficient water and watering equipment to apply complete coverage to the seeded areas in an 8 hour period for each day.

3.13 INSPECTION AND PROVISIONAL ACCEPTANCE

- A. The Engineer will inspect all work for provisional acceptance, at the end of the 10-week maintenance period, upon the written request of the Contractor received at least 10 days before the anticipated date of inspection.
- B. Furnish full and complete written instructions for maintenance of the planting to the Engineer at the time of provisional acceptance.
- C. After all necessary corrective work has been completed and maintenance instructions have been received by the Engineer will certify in writing the provisional acceptance of the planting.

3.14 GUARANTEE PERIOD AND REPLACEMENTS

- A. All plants, including relocated material, shall be guaranteed by the Contractor for not less than two years from the time of provisional acceptance.
- B. At the end of this period, any plant that is missing, dead, not true to name or size as specified, or not in satisfactory growth, as determined by the Engineer, shall be replaced. In case of any question regarding the condition and satisfactory establishment of a rejected plant, the Engineer's decision is final. The Contractor will provide a guarantee for all replacement plants for at least one full growing season.
- C. All replacements shall be plants of the same kind and size as specified. They shall be furnished and planted as specified herein. The cost of replacement shall be borne by the Contractor except where it can be definitely shown that loss resulted from vandalism.
- D. Seeded areas shall be warranted for two years to be in a healthy, vigorous growing condition. If, during the original warranty period, seeded areas die or are unhealthy due to natural causes, failure of germination, etc., or in the opinion of the Engineer, shall be replaced at once and at the expense of the Contractor.

3.15 FINAL INSPECTION AND FINAL ACCEPTANCE

- A. At the end of the guarantee period, inspection will be made by the Engineer upon written request submitted by the Contractor at least 10 days before the anticipated date.
- B. The inspection by the Engineer will determine whether corrective work and/or maintenance shall continue in any area or manner.
- C. Satisfactory vegetation shall be defined as having:

1. No bare spots larger than 4 square inches.
 2. No more than 5 percent of total area with bare spots.
 3. Herbaceous plant height as specified.
 4. No invasive and/or exotic plant species or vines (native or exotic).
- D. Planted and seeded areas not demonstrating satisfactory stands as outlined above, as determined by the Engineer, shall be renovated, reseeded and/or replanted and maintained meeting all requirements as specified herein.
- E. After all necessary corrective work has been completed, the Engineer will certify in writing the final acceptance of the planting.

END OF SECTION

**VIRGINIA CLEAN WATER REVOLVING LOAN FUND
2014 CONTRACT INSERTS
FOR STORMWATER PROJECTS**

The following document is to be inserted "verbatim" in all construction contracts funded by the Virginia Clean Water Revolving Loan Fund. The contract insert contains ten subparts and nine attachments as follows:

1. Subpart A - containing the Federal/State Nondiscrimination Provisions for Equal Employment Opportunities applicable to all construction and service contracts.
2. Subpart B - containing the notice to the prime contractor relative to certification on nonsegregational facilities.
3. Subpart C - setting forth the affirmative action requirements for the contractors and subcontractors for work involving any construction trade in excess of \$10,000.
4. Subpart D - containing the Civil Rights Act of 1964.
5. Subpart E - setting forth requirements of Age Discrimination of 1975, Rehabilitation Act of 1973, and Section 13 of PL 92-500, the Federal Water Pollution Control Act.
6. Subpart F - setting forth requirements under Section 306 of the Clean Air Act and Section 508 of the Clean Water Act for contracts and subcontracts in excess of \$100,000.
7. Subpart G - procurement of goods and materials from Small Businesses in Rural Areas of the Commonwealth of Virginia wherever practical and feasible.
8. Subpart H – provides that a contractor maintains a drug-free workplace or subcontractor during the performance of contract duties for any wastewater revolving loan-assisted project.

Attachment No. 1 – Instructions to Bidders/Offerers

Attachment No. 2 - Certification regarding EEO compliance

Attachment No. 3 - MBE/WBE Utilization Report

SUBPART A

EQUAL EMPLOYMENT OPPORTUNITY

1. Executive Order 11246 (Contracts/subcontracts above \$10,000)

(a) During the performance of this contract, the contractor and all subcontractors agree as follows:

(1) The contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin. The contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion, sex, or national origin. Such action shall include, but not be limited to the following: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this nondiscrimination clause.

(2) The contractor will, in all solicitations or advertisements for employees placed by or on behalf of the contractor, state that all qualified applicants will receive considerations for employment without regard to race, color, religion, sex, or national origin.

(3) The contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or the other contract or understanding, a notice to be provided advising the said labor union or workers' representatives of the contractor's commitments under this section, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

(4) The contractor will comply with all provisions of Executive Order 11246 of September 24, 1965, and of the rules, regulations, and relevant orders of the Secretary of Labor.

(5) The contractor will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts by the administering agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

(6) In the event of the contractors' noncompliance with the nondiscrimination clauses of this contract or with any of the said rules, regulations, or orders, this contract may be canceled, terminated, or suspended in whole or in part and the contractor may be declared ineligible for further Government contracts or federally assisted construction contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246 of September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.

(7) The contractor will include the portion of the sentence immediately preceding paragraph (1) and the provisions of paragraphs (1) through (7) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The contractor will take such action with respect to any subcontract or purchase order as the administering agency may direct as a means of enforcing such provisions, including sanctions for noncompliance. Provided, however, that in the event a contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the administering agency the contractor may request the United States to enter into such litigation to protect the interests of the United States.

SUBPART B

NOTICE TO PRIME CONTRACTOR OF REQUIREMENT FOR CERTIFICATION OF NONSEGREGATED FACILITIES

Bidders and offerors are cautioned as follows: By signing this bid or offer, the bidder or offeror will be deemed to have signed and agreed to the provisions of the "Certification of Nonsegregated Facilities" in this solicitation. The certification provides that the bidder or offeror does not maintain or provide for his employees facilities which are segregated on a basis of race, creed, color, or national origin, whether such facilities are segregated by directive or on a de factor basis. The certification also provides that he will not maintain such segregated facilities.

SUBPART C

CONSTRUCTION CONTRACTORS AFFIRMATIVE ACTION REQUIREMENTS

1. Whenever the Contractor, or any Subcontractor at any tier, subcontracts a portion of the work involving any construction trade, it shall physically include in each subcontract in excess of \$10,000 the provisions of these specifications and the Notice which contains the affirmative action goals for minority and female participation and which is set forth in the solicitations from which this contract resulted.

2. The applicable Minority Business Enterprise (MBE)/Women's Business Enterprise (WBE) "fair share" goals and dollar objectives are established as follows:

	MBE%	WBE%
Construction	5.8	4.0
Equipment	4.1	4.2
Services	3.9	2.6
Supplies	1.5	1.6

3. The MBE/WBE goals set forth in this contract are shown in #2 above. The Contractor shall make every reasonable attempt to achieve the goals as stated. When so notified by the owner, the apparent low bidder shall provide a listing of MBE's and WBE's he proposes to use on this project. Should the bidder fail to meet the aforementioned objectives he shall provide complete documentation which demonstrates the positive efforts made. Failure to satisfy this requirement to the satisfaction of the owner shall constitute a nonresponsible bid and shall be cause for the owner to reject the bid.

4. The contractor shall implement the specific affirmative action steps as provided in Section B included in the Instruction to Bidders/Offerers section of these specifications.

5. The Contractor and all Subcontractors must maintain documentation and records of all solicitations of offers for subcontracts from minority and female construction contractors and suppliers, including circulation of solicitations to minority and female contractor associations and other business associations. Within 21 days of determination of the apparent low bidder, the contractor must furnish to the owner all pertinent documentation, which evidences or documents a good faith effort in MBE/WBE solicitation and projected utilization. Failure to comply with the submission of appropriate MBE/WBE documentation may result in the determination of a bidder as nonresponsible and shall cause the bid to be rejected.

6. Immediately following the award of contracts and continuing through the construction stage, all records of MBE/WBE utilization shall be maintained and reported in accordance with the Virginia Clean Water Revolving Loan Fund MBE/ WBE Utilization Reporting Form. A MBE/WBE Utilization Reporting Form shall be completed and submitted to the owner on a calendar year quarterly basis during the construction period.

SUBPART D

CIVIL RIGHTS ACT OF 1964

The Contractor and any subcontractors shall not, on the grounds of race, color, or national origin, or sex, exclude from participation in, deny the benefits of, or subject to discrimination, any person under any program or activity receiving federal financial assistance.

SUBPART E

**SECTION 13 of PL 92-500;
UNDER THE FEDERAL WATER POLLUTION CONTROL ACT;
REHABILITATION ACT OF 1973; PL 93-112,
AND AGE DISCRIMINATION ACT OF 1975**

The Contractor and any subcontractors shall not on the grounds of race, color, national origin, or sex, exclude from participation in, deny the benefits of, or subject to discrimination any person under any program or activity funded in whole or in part with Federal funds. Any prohibition against discrimination on the basis of age under the Age Discrimination Act of 1975, or with respect to an otherwise qualified handicapped individual as provided in Section 504 of the Rehabilitation Act of 1973 shall also apply to any such program or activity.

SUBPART F

**COMPLIANCE WITH SECTION 306 OF THE CLEAN AIR ACT
AND SECTION 508 OF THE CLEAN WATER ACT
(CONTRACTS AND SUBCONTRACTS IN EXCESS OF \$100,000)**

The Contractor agrees that:

1. Any facility to be utilized in the performance of this contract or any subcontract shall not be a facility listed on the EPA List of Violating Facilities pursuant to 40 CFR 15.20.
2. The Contractor and Subcontractors will comply with all requirements of Section 306 of the Clean Air Act, as amended, and Section 508 of the Clean Water Act, as amended, and all regulations and guidelines issued thereunder.
3. The Contractor will promptly notify the loan recipient and Department of Environmental Quality of any notification received from the Director of the Office of Federal Activities, EPA, indicating that a facility utilized or to be utilized for the contract is under consideration to be listed on the EPA List of Violating Facilities.

SUBPART G

UTILIZATION OF SMALL BUSINESSES IN RURAL AREAS

The contractor and its subcontractors shall maintain a small business solicitation list and make appropriate attempts to procure needed equipment, supplies, and material from small businesses in rural areas of the Commonwealth of Virginia whenever they are a practical source for solicitation.

SUBPART H

**TITLE 2.2, SECTION 2.2-4312, to CHAPTER 43 RELATING
TO THE PROCUREMENT PRACTICES OF ALL PUBLIC BODIES
(DRUG-FREE WORKPLACE)**

For every contract over \$10,000, the contractor must maintain a drug-free workplace. During the performance of this contract, the contractor agrees to (i) provide a drug-free workplace for the contractor's employees; (ii) post in conspicuous places, available to employees and applicants for employment, a statement notifying employees that the unlawful manufacture, sale, distribution, dispensation, possession, or use of a controlled substance or marijuana is prohibited in the contractor's workplace and specifying the actions that will be taken against employees for violations of such prohibition; (iii) state in all solicitations or advertisements for employees placed by or on behalf of the contractor that the contractor maintains a drug-free workplace; and (iv) include the provisions of the foregoing clauses in every subcontract or purchase order of over \$10,000, so that the provisions will be binding upon each subcontractor or vendor.

For the purposes of this section, "drug-free workplace" means a site for the performance of work done in connection with a specific contract awarded to a contractor in accordance with this chapter, the employees of whom are prohibited from engaging in the unlawful manufacture, sale, distribution, dispensation, possession or use of any controlled substance or marijuana during the performance of the contract.

**Minority Business and Women's Business
Enterprise (MBE/WBE) Requirements of 40 CFR 33.240**

Bidder/Offerer Responsibilities

A. Affirmative Steps: Activities during preparation of bids and offers. Bidders/offers shall take affirmative steps in compliance with the regulations, prior to submission of bids or closing data for receipt of initial offers, to encourage participation in projects by MBE and WBE firms. Such efforts include:

1. Establish and maintain a current solicitation list of minority and female recruitment sources, and assure MBE and WBE firms are solicited once they are identified.
2. When feasible, segmenting total work requirements to permit maximum MBE/WBE participation and establish delivery schedules to encourage MBE/WBE participation.
3. Assuring that MBE and WBE firms are solicited whenever they are potential sources of goods and services. This step may include:
 - a. Sending letters or making other personal contact with MBE and WBE firms, private agencies and state associations (e.g., whose names appear on lists prepared by EPA or the recipient and other MBE/WBE known to the bidder/offerer). MBE and WBE firms should be contacted when other potential subcontractors are contacted, within reasonable time prior to bid submission or closing date for receipt of initial offers. Those letters or other contacts should communicate the following:
 - (i) Specific description of the work to be contracted;
 - (ii) How and where to obtain a copy of plans and specifications or other detailed information needed to prepare a detailed price quotation;
 - (iii) Date the quotation is due to the bidder/offerer;
 - (iv) Name, address, and phone number of the person in the bidder/offerer's firm whom the prospective MBE/WBE subcontractor should contact for additional information.
 - b. Using the services and assistance of the Small Business Administration and the Office of Minority Business Enterprises of the U.S. Department of Commerce.

B. Bidders/offers must demonstrate compliance with MBE/WBE requirements to be deemed responsible. Demonstration of compliance may include the following information; however, the recipient may specify other methods of demonstrating compliance:

1. Names, addresses and phone numbers of MBE/WBE firms expected to perform work;
2. Work to be performed by the MBE and WBE firms;
3. Aggregate dollar amount of work to be performed by MBE and WBE firms, showing aggregate to MBE's and aggregate to WBE's separately;

4. Description of contacts to MBE and WBE organizations, agencies and associations which service MBE/WBE firms, including names of organizations, agencies and associations and dates of contacts;
 5. Descriptions of contacts to MBE and WBE firms, including number of contacts, fields (i.e., equipment or material supplier, excavators, transport services, electrical subcontractors, plumbers, etc.) and dates of contacts.
- C. Successful bidders/offerers should take reasonable affirmative steps to subcontract with MBE and WBE firms whenever additional subcontracting opportunities arise during the performance of the contract.

**BIDDER COMPLIANCE STATEMENT/CERTIFICATION REGARDING EQUAL
EMPLOYMENT OPPORTUNITY**

Applicability: Bid exceeding ten thousand dollars for construction contract/subcontract of unlimited amount and non-construction contract/subcontract of less than one million dollars.

This statement relates to a proposed contract between _____ and Public Body or
(contractor)

subcontract between _____ and _____ to be
(subcontractor) (contractor)

funded under a federally assisted project. Pursuant to Executive Order 11246 and its implementing regulations at 41 CFR 60-1.7(b) (1), as the undersigned bidder, I certify that:

- 1) Bidder has participated in a previous contract or subcontract subject to the Equal Opportunity Clause.
Yes No
- 2) Bidder has developed and has on file at each establishment affirmative action programs pursuant to 41 CFR 60-2 (applies only to non-construction contractor).
Yes No
- 3) Bidder has filed with the Joint Reporting Committee, the Director (Office of Federal Contract Compliance Programs, U.S. Department of Labor), and agency, or the Equal Employment Opportunity Commission, all reports due under the applicable filing requirements.
Yes No

I understand that if I have failed to file any compliance reports which have been required of me, or have failed to develop and have on file at each establishment affirmative action programs pursuant to 41 CFR 60-2, when required, I am not eligible to have my bid or proposal considered, or to enter into the proposed contract.

I further understand that if awarded the proposed contract, and the contract for the FIRST time brings me under the filing requirements or the written affirmative action programs that I will, as applicable: (a) within 30 days file with the Public Body Standard Form 100 (EEO-1); and (b) within 120 days from the commencement of the contract develop and submit to the Director of OFCCP for approval a Written Affirmative Action Plan.

NAME AND ADDRESS OF BIDDER (Include ZIP Code):

NAME AND TITLE OF SIGNER (Please Type or Print):

SIGNATURE: _____ DATE: _____

VIRGINIA CLEAN WATER REVOLVING LOAN FUND

PART I - MBE/WBE UTILIZATION REPORTING

Send completed form to: Department of Environmental Quality
Clean Water Financing and Assistance Program
P.O. Box 1105, Richmond, Virginia 23218.

Reporting contact is Ken Savko; phone number is (804) 698-4141 - kenneth.savko@deq.virginia.gov
Fax Number (804) -698-4032

Year 20__

Reporting Quarter: (check one)

1st (Oct.-Dec.) ____

2nd (Jan.-Mar.) ____

3rd (Apr.-Jun.) ____

4th (Jul.-Sept.) ____

Name of Loan Recipient:

VCWRLF Loan Recipient Project No.: C-515 _____

Prime Contractor:

Contract Number:

Date for Start of Construction:

Is the Prime Contractor an MBE or WBE? Yes No

Have you subcontracted with an MBE or WBE firm in this quarter?

Yes No

Please sign and date below.

And, if you answered yes to subcontracting with an MBE or WBE firm please provide information on Part II.

Contractor's Signature (or Recipient's signature if prime contractor is MBE\WBE firm)

Date

Fax Number

Email Address

If an MBE/WBE subcontract is rescinded, please give name of firm, date of rescission and amount of rescission.
